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Bay Area's Computer Magazine

MARCH 20, 1989 • 54

MicroTimes™

Ed McCracken (l)
And Jim Clark
Of Silicon Graphics

3D WORKSTATIONS

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*PC Magazine, January 12, 1988

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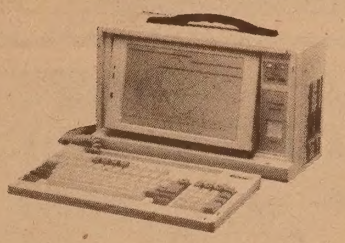

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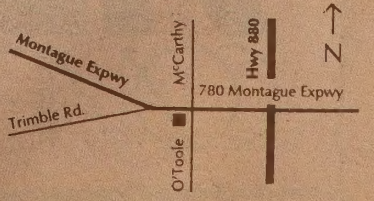

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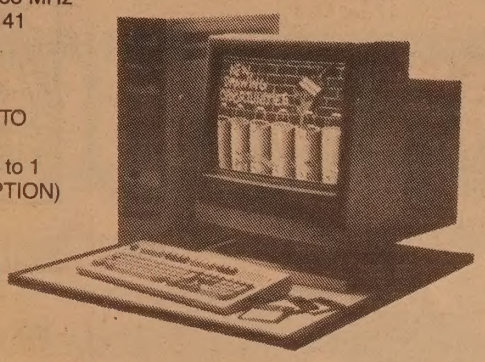

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MARCH 20, 1989 ISSUE #54

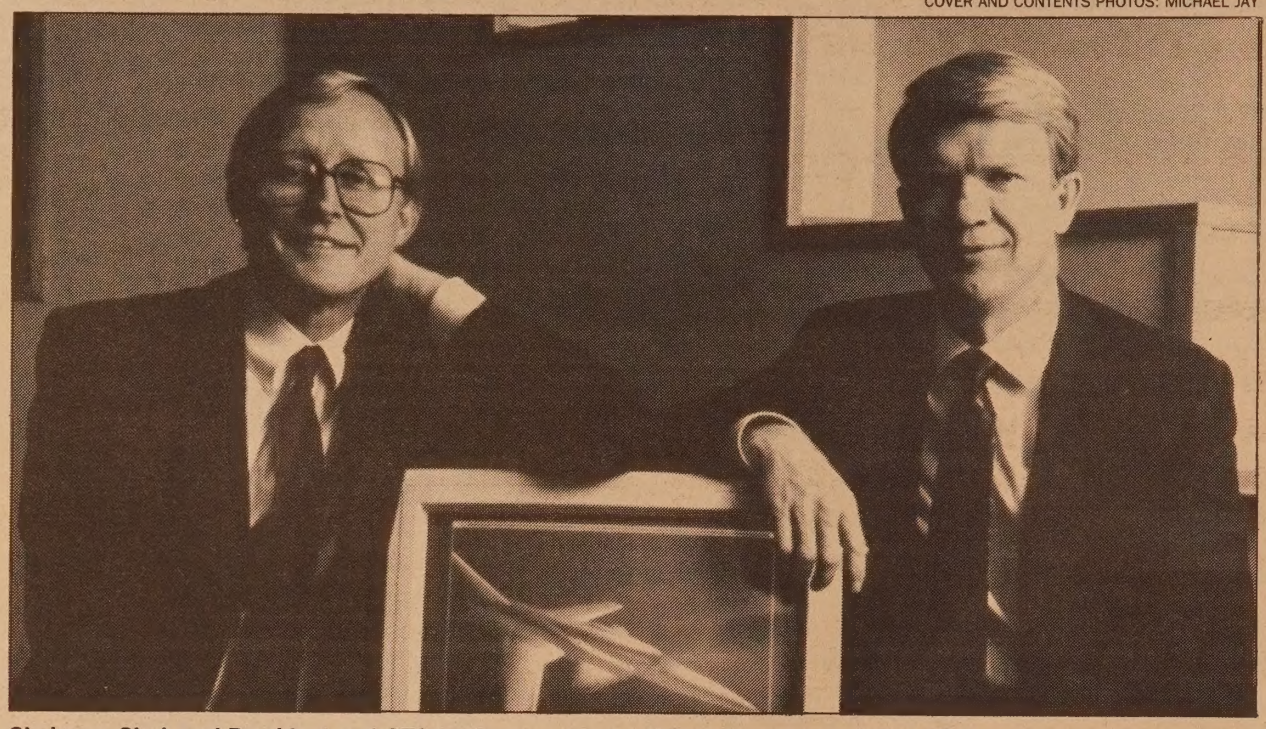
MICROTIMES™

COVER STORY

54 Silicon Graphics: New Leaders In 3D Graphics Workstations *By Mary Eisenhart*

Jim Clark and Ed McCracken say they want Silicon Graphics to be the undisputed best in real-time 3D graphics and modeling workstations. With the company's UNIX-based machines now selling for about $15 thousand, their impressive RISC-based, user-friendly systems for graphic artists, engineers, architects, and scientists may revolutionize the world of 3D modeling.

COVER AND CONTENTS PHOTOS: MICHAEL JAY



Chairman Clark and President and CEO McCracken show off their stunning real-time 3D graphics machine.

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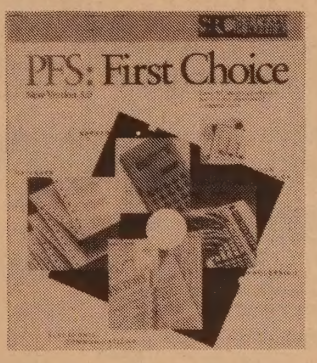

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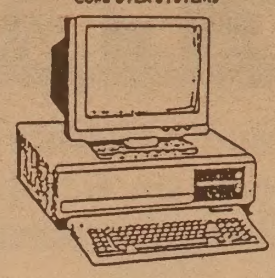

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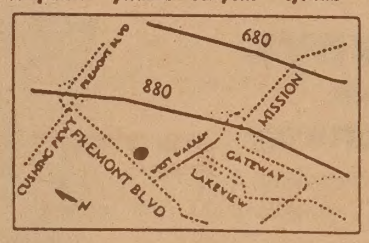

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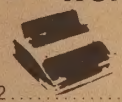

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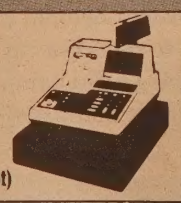

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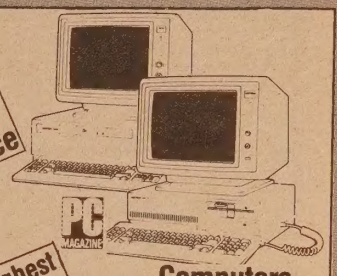

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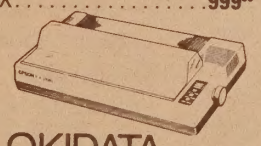

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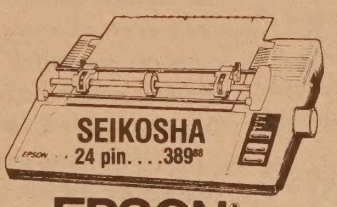

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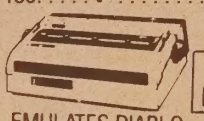

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L E T T E R S

The MicroTimes 100—A Cautionary Tale

I just finished reading your Mid-December issue of *MicroTimes*. I was very interested in your *MicroTimes* list of the "Industry's Most Influential Leaders." After reading this article it was apparent that you had made a large mistake in omitting one company, Hewlett-Packard.

Your mistake was so obvious and glaring I felt I had to write you a letter. You had CEOs from IBM, DEC, and Apple in your list, but not H-P. H-P is one of the first companies in the Valley, they are one of the most successful companies in the industry, they are one of the best-run companies in the country, and one of the largest computer employers in the Bay Area.

Ask all the people on your 100 list who they think are the "fathers" of the industry, and I bet Bill [Hewlett] and Dave [Packard] would be at the top of the list. Look through your own magazine and see how often H-P is mentioned or their products are advertised. Think of all the engineers at computer companies that use their equipment.

David Packard is not influential? He is one of the wealthiest men in the country. He was Under Secretary of Defense, just won the Presidential Medal of Freedom, and has been a leader in philanthropy. The list of committees he has headed and awards he has won would fill your magazine. Oh well, enough said.

How about Bill Hewlett or John Young? They both are very influential. When I see some of the people who made your list I have to laugh. Ten years from now nobody will remember them.

Ralph Seaton
Soquel

Mr. Seaton has a point, and we certainly didn't intend to slight Hewlett-Packard, a company whose excellent reputation speaks for itself. Unfortunately, this is the kind of letter we wish we got before *we compiled our list, because it is the literal truth that none of the readers who sent in ballots for the MicroTimes 100 mentioned a single H-P employee. Not even Judge Robert Aguilar's son whose belatedly-discovered employment at H-P temporarily derailed the Apple/H-P/Microsoft look-and-feel suit...*

Gentle readers, if there's somebody you think should be on the list, don't be shy. ***Tell us.*** *You don't even have to wait for the official ballot. We really want to know what you think.*

As for the fleeting nature of some nominees' fame, the list, being annual, is not intended as a lifetime achievement award. Rather, it honors those who have made contributions to the micro industry during the calendar year in question. True, some of them may well be forgotten ten years hence; this does not diminish the significance of their current achievement.

After all, not too many people remember who the architects of the Altair were, but where would we be without them?

Fear And Loathing Redux

The January issue is a gem! My first editor told me that a journalist only has two duties: tell the truth and raise hell. *MicroTimes* performed very well on both counts. Jim Warren raised a lot of questions that should be raised about products that should be available but are not. John Dvorak was, as usual, a curmudgeon and gave the software giants a bad time. I agree with him: I just don't want to be near his car when he starts it in the morning.

My real favorite was "Fear and Loathing at COMDEX." The Reverend John [Perry Barlow] really said what was on my mind. My wife will be forever grateful since I've been ranting about this for a long time.

My only negative comment about his article is that after a paragraph of good, clean, declarative sentences, he likes to drop in a four-syllable jaw breaker or obscure reference. However, I did like the reference to executives as "Bizdroids." Reading his article was a bit like jogging through the mountains: you keep one eye on the beauty of it all, and one eye out for rattlesnakes and doggy-doo.

Aldo S. Panzieri
Alhambra

I can't think when I have been more entertained by a piece of computer-related prose as while reading "Fear and Loathing at COMDEX" by The Most Reverend John Perry Barlow. But however much I am willing to allow the Rev. Barlow to amuse me with his genius for bombast and metaphor, I am not quite so ready to agree with his point of view.

Rev. Barlow (I'll continue to use his official title to avoid having my system destroyed by a divine power surge) does indeed take on the color of a Hunter Thompson clone. In fact I am very much reminded of my own immature attitudes toward the so-called establishment during the late great sixties. I hope I don't have to remind a theological scholar that it is the sameness in superficialities such as dress and manners that frames the contrast for the vast differences in human personality and creativity. Seminaries and monasteries demand a similar kind of discipline to encourage rational thought and, it is hoped, spiritual awakening.

If it comes to making choices on the basis of "sparkles of interest," I will have to side with my fellow productivity drones (who actually understand how things work) over the scruffy disheveled airheads, who strive, mouse in hand, for utopia. If Rev. Barlow is nostalgic for the Merry Pranksters, perhaps he should take up as a DP consultant for some Rumanian traveling show.

Admittedly Las Vegas is a hellhole that resembles the underside of something rotten exposed to the light of day. It baffles me why anyone could find the place in any way interesting. Perhaps a change of venue for COMDEX to one of the more scenic cities of the west would lead to a more congenial atmosphere.

Pray for surf.

Bill Copenhaven
Richmond

It's hard to know where to begin concerning Mr. Barlow's polemic on COMDEX. We'll begin with the positive points. First of all, Barlow is correct about American technological innovations being ignored in this country, only to be taken up by the Japanese. This is a valid point, which really needs to be addressed in our industry.

He is also correct concerning the bureaucratization of the computer industry. However, the fact that he is shocked at this reveals just how naive he is. What planet has he been living on? The fact that he touches briefly on valid issues makes it even more disappointing when he launches off on a ferocious left-wing tirade for the remainder of his piece. Honestly now, are the "consequences of free expression" the same in America as they are in the Soviet Union, e.g. "disenfranchisement and loss of economic security"? When this self-styled "reverend" is a living contradiction of this foolish assertion: a lyricist for the Grateful Dead? Give me a break. I'd like to see him try his little games in Moscow, glasnost or not.

Mr. Barlow's piece is entirely negative in its tone, and embodies, as such, the leftist mentality. Why not light a candle instead of cursing the darkness? Also, while we're at it, why not stick to the subject at hand instead of declaiming hysterically about how America is becoming a totalitarian nation?

Buddy, it looks to me like Barlow's not doing the right drugs!

Rich Grace
Huntington Beach

Barlow replies: What a great letter. Mr. Grace may have more in common with me than he thinks. I suspect we are both techno-cranks, a commonality which transcends the ideological issues to which he refers.

Even in those matters, the gap probably isn't so wide. I haven't been called a leftist since that pleasant August evening 20 years ago when I rode my motorcycle into Czechoslovakia while Soviet tanks entered from the opposite border. They rolled right over the little flowers of my collegiate Marxism.

So, while I may have been working for the Grateful Dead (an entirely apolitical institution, by the way), I was, not so long ago, the Republican County Chairman of Sublette County, Wyoming, a region about as conservative as any non-Islamic place has been since the Middle Ages.

But I will stick by my final assertions. Those who work in corporate America are forsaking liberties of thought, speech and action to a larger extent than most of them know. This process is the more insidious for its subtlety. Company people buy in gradually until they uncritically allow the purposes of "our company" to become their own. In that sense, we are talking about totalitarianism in the most precise sense—an oppression so complete that the oppressed become the oppressors without even knowing it.

He's right about one thing: it's better to light a candle. However, since I am neither an engineer or a businessman, I can't light the the technological candles that will light the future. I can only point out the ones already burning. And I know when I've gone into an area of darkness. Like COMDEX.

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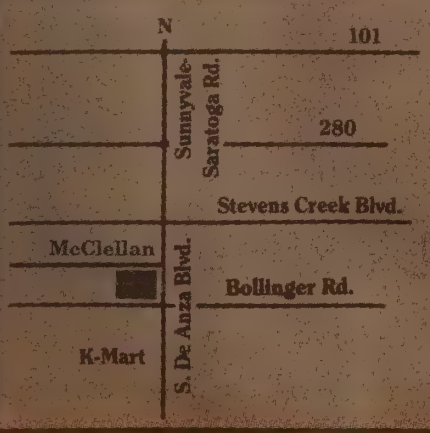

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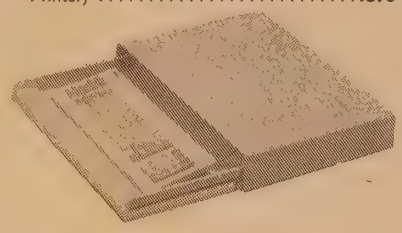

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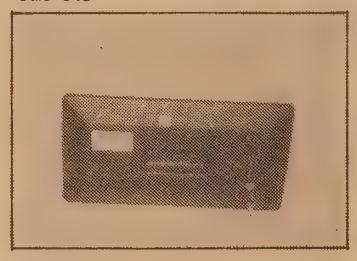

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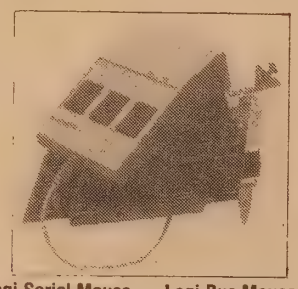

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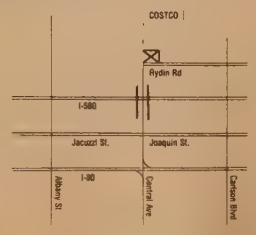

LETTERS

And, oh yes...I don't take any drugs at all.

Re: Industry Issues By Rev. John Perry Barlow
Fear And Loathing at COMDEX—January 23, 1989

Dear Editor:
Funny, funny, funny. More, more, more.

Jason Alexander
San Francisco

The article "Fear And Loathing At COMDEX" by Rev. John Perry Barlow was the most outrageous and informative piece I have read recently in any publication. I greatly hope that you will have this gentleman as a frequent contributor. You would be advised to issue a disclaimer at the heading of anything he might write, however. This man names names and stomps on toes.

I would probably not have written, since I have always expected excellence of *MicroTimes*, especially given the price I pay for it, except that there was an editing or typographical error in the IBM section. The *son et lumière* requires an accent grave rather the accent as printed. My suggestion is that you simply omit the accents when you feel compelled to fly off into other languages. It seems to me that you look ridiculous when you attempt French (or whatever else you may have pretensions to) and get it wrong.

As a reader and buyer for your advertisers, I am pleased that you are concerned with the entertainment aspect of microcomputers as well as the technical. As for the error, I am certain it was a typo or a machine malfunction, but I still could not let it pass. It annoys me when others begin to be as pretentious as *moi-même*.

Jack Eason
Santa Cruz

Foreign Characters: The Plot Thickens

In reference to your article in the mid-December issue of *MicroTimes* [in User Group Network, asking help in getting foreign-language diacritical marks properly placed on screen and paper], I have had some (bad) experiences trying to write in the Spanish language.

First, I am using an Epson Equity I clone with Epson LX-80 printer. I have had this setup going on three years. I have spent most of this time trying to write (on paper) in Spanish, since I have been studying the language.

From my experience placing the tilde is the least of the problem, but I am not using a Macintosh. The problem most probably is in the printer. About half of the Epson printers cannot print international characters. My particular printer uses the special ASCII decimal codes (for international characters) to print italics instead. Therefore it is impossible to print anything using these decimal codes.

I have used at various times *WordPerfect* 4.2, *Volkswriter III*, and *PC-Write*. All of them put correct text on the screen, and I am sure that [if I were] using an appropriate printer, it would print it on paper. But mine doesn't.

PC-Write, but not the other word processing programs, will back-space without erasing by using the ACCENT key (the one with the double parenthesis which looks like a backward apostrophe and the tilde on it). This makes it very simple to write and print the tilde. The real and important problem is how to put the accent mark on the vowels.

The documentation for the printer provides that you can use the accent key and then the apostrophe to get a mark over the vowels. This system works, but it is really not satisfactory. The screen looks like a smudge. Of course there is other punctuation. To get the exclamation and question marks Epson gives a one-line program in BASIC to set the DIP switches for several international languages. They can also be set by hand:

¡María! ¿Qué pasó esta mañana?

Robert S. Walker
Woodside

Gee, we thought Mac users had problems with this...

As it turns out, the Mac handles all this very well in its native state. Mostly through little-known uses of the Option key in combination with other characters. Arthur Naiman's Macintosh Bible *contains an excellent discussion of the problem and a list of keystrokes required to produce the desired characters. The book is recommended with wild enthusiasm.—eds.*

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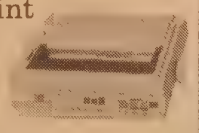

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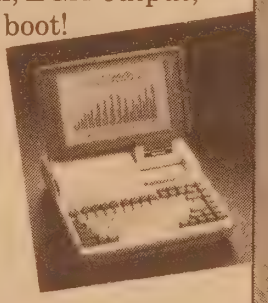

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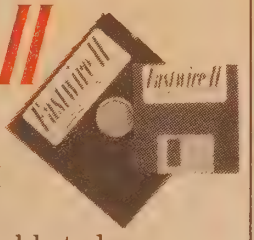

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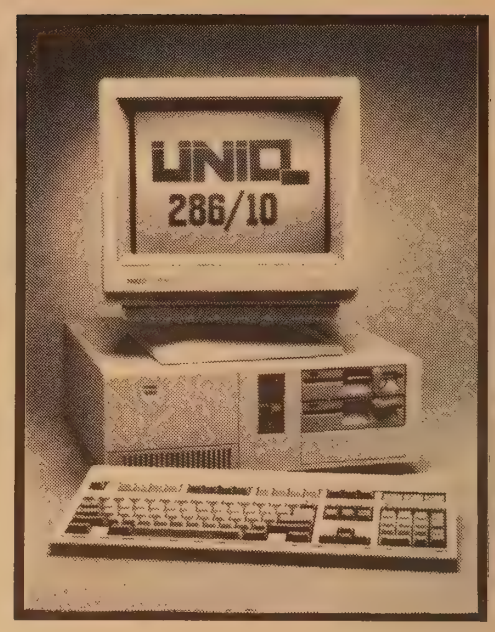

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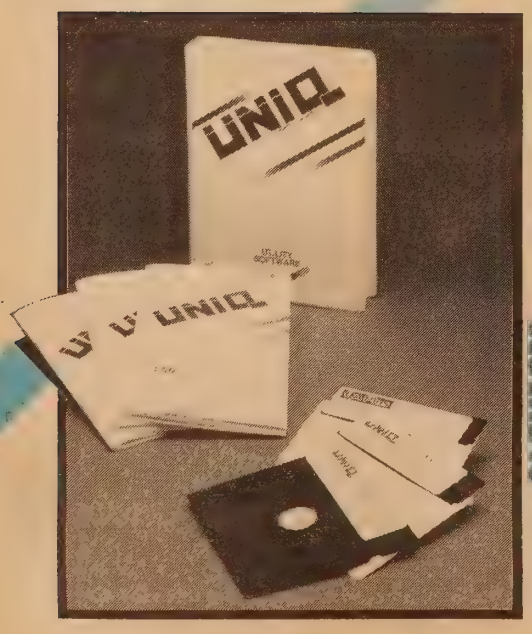

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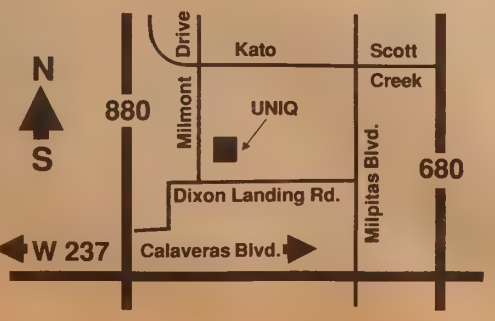

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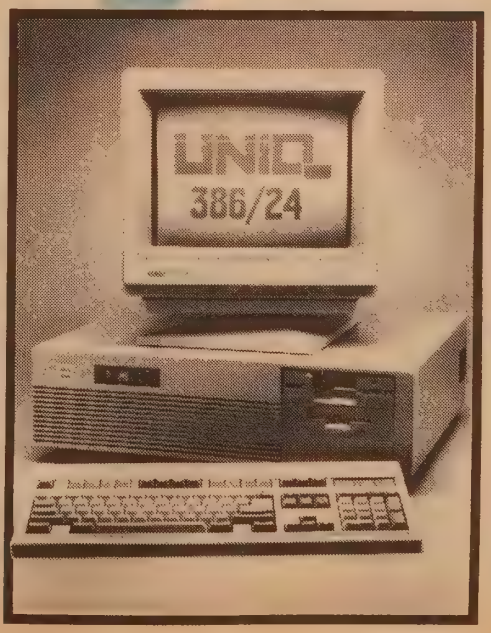

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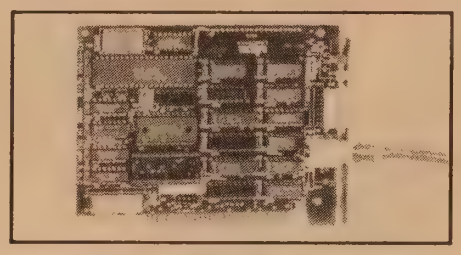

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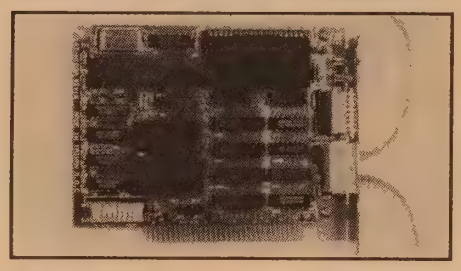

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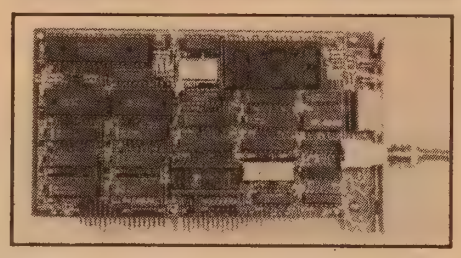

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March 21 PageMaker II Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

March 21 HyperCard II Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

March 21 Fractal Designs In Nature And Computer Graphics. San Francisco. Artists Using Science And Technology. Call: Trudy Reagan, (415)856-9593.

March 21 OOP SIG Meeting. Palo Alto. SEF. Call: Dean Ritz, (415)859-1043.

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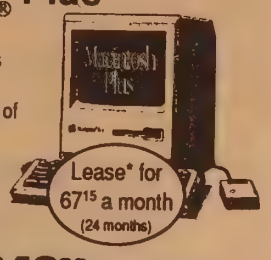

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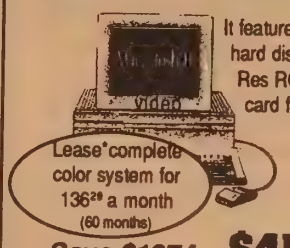

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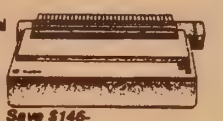

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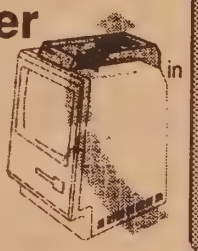

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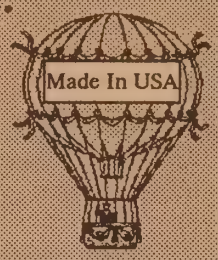

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March 23 Marketing SIG Meeting. Palo Alto. SEF. Call: Don Morrison, (408)425-7222.

March 25 deBase deMystified. San Francisco. Prolog Financial Systems. Call: (415)441-3117.

March 25 Computer Show And Sale. Santa Clara. Golden Gate Shows. Call: (415)388-8893.

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March 27 Computer Viruses: How To Identify, Banish, And Prevent. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

March 27 Seeing The Rest Of C Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

March 28 Introduction To Graphics Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

March 28 HyperCard III Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

March 28 Fourth International Conference On CD-ROM. Anaheim. Microsoft. Call: (206)325-5702.

March 28 Automating Your Accounting System With Solomon—See What It Can Do For Your Business! San Francisco. J.C. Lukrich & Co. Call: (415)864-6770.

March 29 PageMaker III Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

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March 29–31 3rd Annual Parallel Processing Symposium. Fullerton. The Computer Society Of The IEEE. Call: (714)738-3414.

March 30-31 Western Educational Computing Workshops. San Diego. California Educational Computing Consortium. Call: (415)338-1212.

March 30-31 Programming Neural Networks Seminar. Burlingame. Software Development Seminars. Call: (415)397-1881.

March 30 Basic Macintosh Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

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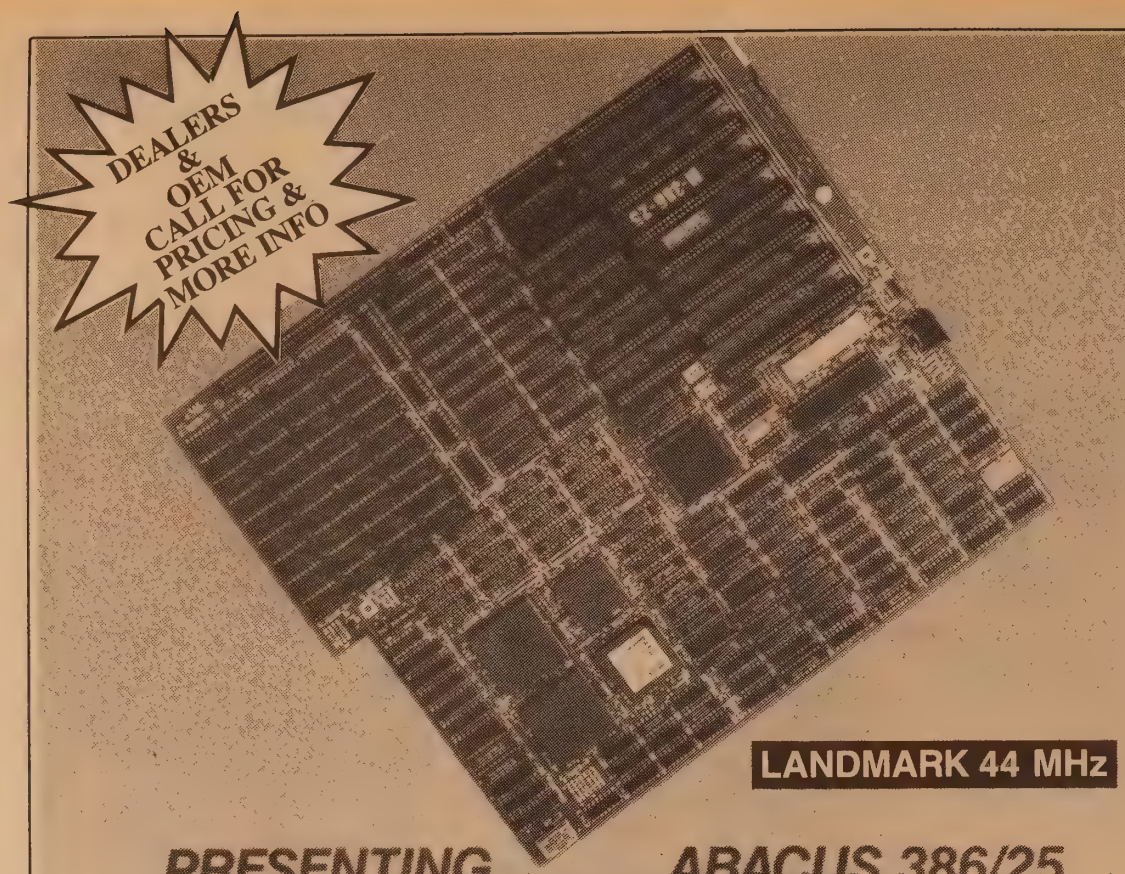

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* 25 MHz 80387 Numeric Co-processor supported

* Weitek 3167 Numeric Co-processor supported
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March 30 Codemakers vs. Codebreakers—How Computers Affect The Balance Of Power. San Francisco. University of San Francisco. Call: Marlon Villa/Mel Taylor, (415)666-6107.

March 30–31 UNIX & Open Systems Futures: The Impact On Software Strategies. Los Angeles. Digital Consulting, Inc. Call: (508)470-3880.

March 31–April 2 National Apple User Group Conference. Indianapolis. National Apple User Group. Call: (317)291-4042.

March 31 Going Multiuser—All About Networking Microcomputers And About The UNIX Alternative Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

April 1 Computer Show And Sale. Santa Rosa. Golden Gate Shows. Call: (415)388-8893.

April 1 Shop Till Ya Drop Computer Swap. San Francisco. Microshows. Call: 1-800-433-7469.

April 1 LAN Essentials: Installation & Configuration Class. Oakland. DATAssociates. Call: (415)465-9083.

April 3—May 4 IEEE Symposium On Security & Privacy. San Francisco. The Computer Society of the IEEE. Call: (202)371-1013.

April 3–4 DataFlex Programmer's Class. San Jose. Goldcoast Software Systems. Call: (415)964-1500.

April 3 Word I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 3 Quick Start Ventura Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205..

April 4 Word I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 4–6 Third Annual ESD/SMI Expert Systems Conference And Exposition. Detroit. ESD. Call: 1-800-457-9504.

April 5 Advances In Technology Benefitting People With Disabilities. San Francisco. Association For Women In Computing. Call: (415)655-3110.

April 5 PageMaker I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 5 Introduction To Graphics Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 6 Basic Macintosh Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 6 PageMaker I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 6 Cellular Automata And Artificial Life. San Francisco. University of San Francisco. Call: (415)666-6107.

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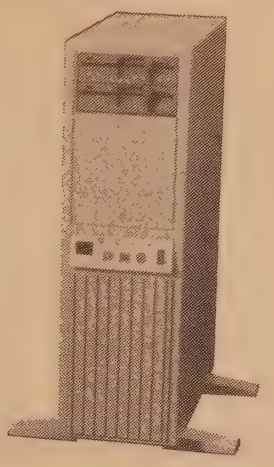

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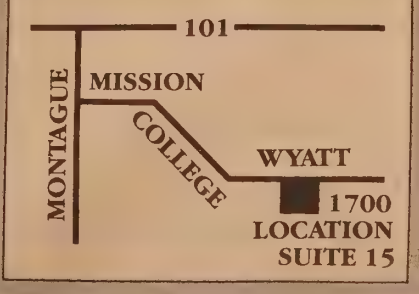

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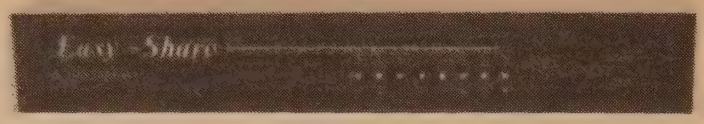

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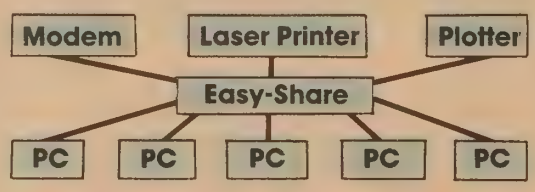

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April 7 Introduction To Excel Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 8–9 Computer Show And Sale. Oakland. Golden Gate Shows. Call: (415)388-8893.

April 8 System Administration: Managing A Novell Network. Oakland. DATAssociates. Call: (415)465-9083.

April 8 De Anza Computer Mart. Cupertino. De Anza College. Call: (408)996-4350.

April 8 Shop Till Ya Drop Computer Swap. Pleasanton. Richard James. Call: 1-800-433-7469.

April 10-14 Hong Kong International Computer Conference. Hong Kong. American Federation of Information Processing Societies, Committee on Science and Technology. Call: (312)299-4227 or 299-4270.

April 10-13 MACdex/Spring. Chicago. The Interface Group. Call: (617)449-6600.

April 10 Introduction To Excel Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 11-14 Structured Design & Programming Course. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

April 11 Basic Macintosh Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 11 Word I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 12 PageMaker I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 12 HyperCard I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 12 Power Storage: Introduction To CD-ROM. Berkeley. Society For Technical Communication. Call: Rae Montor (415)531-2315.

April 12 Joint Marketing Efforts With Software Developers. Oakland. High Technology Entrepreneurial Council. Call: Rachel Muñoz. (415)339-3895.

April 13 PageMaker I Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 13 Producing Your Newsletter Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 13 A Proposed Microcomputer–Based Laboratory For USF Physics. San Francisco. University of San Francisco. Call: (415)666-6107.

April 15 LAN Maintenance: Troubleshooting And Diagnostics. Oakland. DATAssociates. Call: (415)465-9083.

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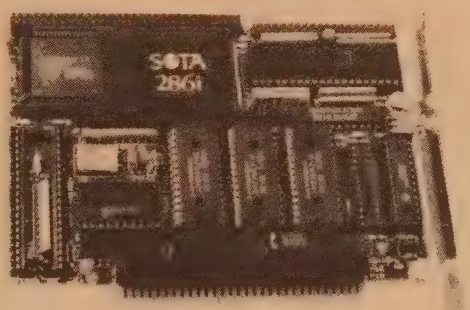

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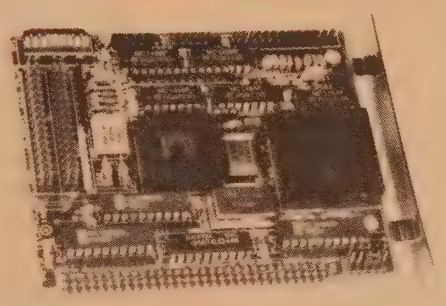

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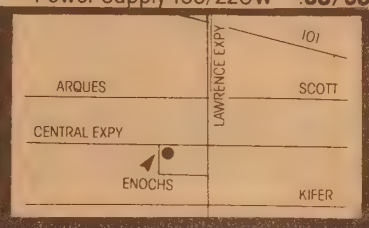

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April 15 Computer Show And Sale. Vallejo. Golden Gate Shows. Call: (415)388-8893.

April 16 San Francisco Computer Show, Sale, And Swap. Fort Mason Center. Compu-Shows. Call: (415)931-0423.

April 17 Word II Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 18-20 Connect '89, The Technical Conference And Exposition For MIS/Communications Professionals. Boston World Trade Center. Hill and Knowlton. Call: (617)330-7630.

April 18 Word II Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 18 Introduction To Illustrator Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 18 Computer Seminar: Real Estate Management. San Francisco. Howard M. Haberman Associates. Call: (415)641-0850.

April 18 Automating Your Accounting System With Solomon—See What It Can Do For Your Business! San Francisco. J.C. Lukrich & Co. Call: (415)864-6770.

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April 20 PageMaker II Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 20 Career Directions In Computer Graphics. San Francisco. University of San Francisco. Call: (415)666-6107.

April 21 Basic Macintosh Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 22 Shop Till Ya Drop Computer Swap. Oakland. Microshows. Call: 1-800-433-7469.

April 24–26 Building Expert Systems Course. San Francisco. Institute For Professional Education. Call: (703)527-8700.

April 24–26 Moving To dBASE IV Seminar. San Francisco. Digital Consulting. Call: (508)470-3880.

April 25 PageMaker III Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

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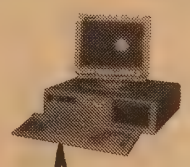

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April 26–28 Storage Track '89 Computer Storage Industry Conference. Santa Clara. Dataquest. Call: 1-800-624-3282.

April 26 Introduction To Graphics Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 26 HyperCard III Hands-On Class. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 27 Getting The Most From Your Mac: Tricks, Shortcuts, Problem Solving, And Special Features On The Mac. Fort Mason, Bldg. D. Computer Alliance. Call: (415)771-1671

April 27 Geometric Algorithms With Neural Network Behavior. San Francisco. University of San Francisco. Call: (415)666-6107.

April 27–28 Advanced dBASE IV Topics Seminar. San Francisco. Digital Consulting. Call: (508)470-3880.

April 29 Shop Till Ya Drop Computer Swap. San Francisco. Microshows. Call: 1-800-433-7469.

May 1–3 Physical Design Workshop: Module Generation & Silicon Compilation. Newport Beach. The Computer Society Of The IEEE. Call: Bryan Preas, (415)494-4845.

May 1–2 Internet Requirements Seminar. Monterey. Advanced Computing Environments. Call: (415)941-3399.

May 3–5 PC Networking: Hands-On Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

May 4 Workbenches: Productivity Aids For Programming. San Francisco. University of San Francisco. Call: (415)666-6107.

May 5–6 Spring CUE Conference. Irvine. Computer-Using Educators. Call: (415)328-2248.

May 6 LAN Essentials: Installation & Configuration Class. Oakland. DATAssociates. Call: (415)465-9083.

May 7–8 Computer Game Developers' Conference. Palo Alto. Call: (408)738-4888.

May 9–12 Digital Control Systems: Design Techniques & Tools Course. San Francisco. Integrated Computer Systems. Call:John Valenti, 1-800-421-8166.

May 9-10 EuroBus/89—Germany. Muenchen Sheraton, Munich. MultiDynamics, Inc. Call: Anne Weber, (714)669-1201.

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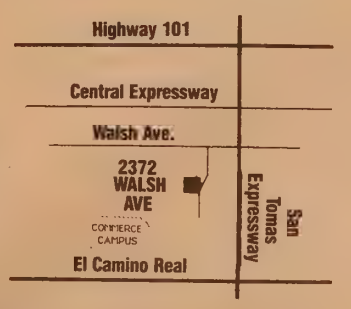

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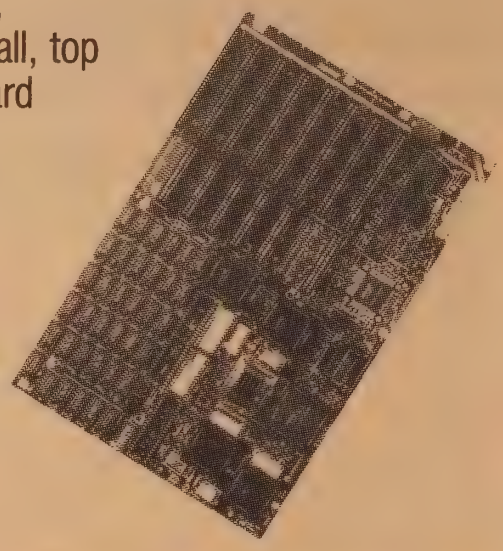

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May 13 System Administration: Managing A Novell Network Class. Oakland. DATAssociates. Call: (415)465-9083.

May 13 De Anza College Computer Mart. Cupertino. De Anza College. Call: (408)996-4581.

May 18 Computer Seminar: Real Estate Management. San Francisco. Howard M. Haberman Associates. Call: (415)641-0850.

May 18 CD-ROM Developers Seminar. San Jose. Meridian Data, Inc. Call: (408)998-1900.

May 20 LAN Maintenance: Troubleshooting And Diagnostics Class. Oakland. DATAssociates. Call: (415)465-9083.

May 21–24 SPA Symposium. San Diego. Software Publishers Association. Call: Jayne White, (202)452-1600.

May 23–25 Systems Design & Networks Conference. Santa Clara. Computer Society Chapter Of Santa Clara Valley. Call: Kenneth Majithia, (408)256-4914.

May 23–26 Microprocessor Troubleshooting: Hands-On Tools & Techniques Seminar. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

May 23 Computer Seminar: Real Estate Management. San Francisco. Howard M. Haberman Associates. Call: (415)641-0850.

May 27 Amiga Computer Animation Festival. San Francisco. Artists' Television Access. Contact: Craig Baldwin, 992 Valencia St., San Francisco, CA 94110.

May 28 San Francisco Computer Show, Sale, And Swap. Fort Mason Center. Compu-Shows. Call: (415)931-0423.

May 31 Portable Computing '89. Santa Clara. International Data Group. Call: 1-800-225-4698.

June 3–5 Showbiz Expo. Los Angeles. Live Time, Inc. Call: (213)668-1811.

June 3 LAN Essentials: Installation And Configuration Class. Oakland. DATAssociates. Call: (415)465-9083.

June 4–8 1989 IEEE International Conference: Computer Vision & Pattern Recognition. San Diego. The Computer Society Of The IEEE. Call: Dr. Rama Chellappa, (213)743-8559.

*As a community service, **MicroTimes** lists trade shows, seminar, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month, two months before the coverdate of the issue in which you'd like it to appear (i.e. the deadline for the March issue, distributed during February, is January 1). Send to: MicroTimes Calendar of Events, 5951 Canning St., Oakland, CA 94609.*

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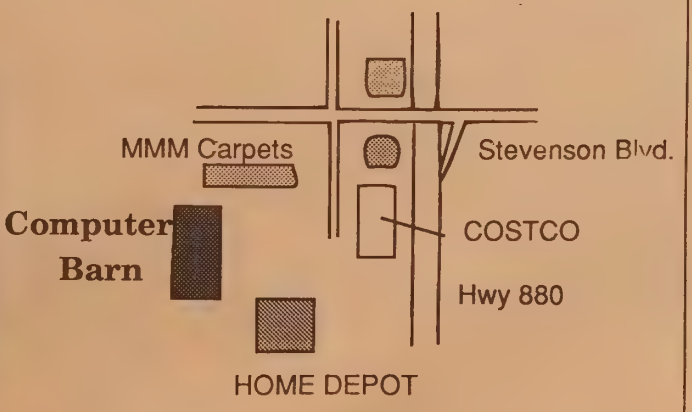

NEWS
AND ANALYSIS

BY PAUL HOFFMAN

IN THE NEWS . . .

30

Intel Loses Copyright To 8086 And 8088 Microcode Due To Negligence

Intel said it was out to prove that microcode was copyrightable—the judge said they were right, but they lost their's by not requiring companies to put Intel copyright statements on chips they second-sourced to them.

32

US Charges Japan With Disk Dumping

Look forward to higher 3.5" disk prices now that the US Commerce Department has ruled that Japanese companies have been selling disks at unfairly low prices.

34

Atari Sues Nintendo

Atari Corporation is accusing Nintendo of monopolistic behavior by preventing game developers from porting their Nintendo games to other computers.

38

Communications And The Small Business User

First it was networking. Now the latest marketing buzzword is fax-in-your-computer, but the actual benefits of this new technology may be highly overrated.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

Intel Loses Copyright To 8086 And 8088 Microcode Due To Negligence

NEC Exonerated In Copying Charge

In a stunning defeat for Intel, US District Court Judge William P. Gray decided that Intel had lost the copyright on the microcode to the 8086 and 8088 CPU chips since it had not maintained a good-faith effort keep the copyright. Further, he ruled that even if the copyrights were valid, NEC had not violated them in its V series CPUs. The ruling will give NEC's chips a large boost, since customers do not need to worry about legal ramifications of their use. NEC has been plagued with low sales of the V series relative to Intel's chips, even though the V series runs faster and has wider capabilities.

The lawsuit, which has taken many years to be heard and decided, sets a strong precedent for chip makers. It clearly defines what can and cannot be done to protect microcode. Microcode is the design of the circuitry in a chip, somewhat like a complex roadmap of where the electrical impulses will go and what they will do in particular circumstances. Gray ruled that it is all right to copy from a competitor's microcode, but not to copy it exactly. This conforms to the rulings that have been made on copyright in other areas such as books and films. NEC had looked at Intel's microcode (through an arrangement with Intel under which NEC was producing Intel's chips to help widen the market), but had made improvements on the microcode and changed it in many places. Gray ruled that since NEC had obtained the copy legally and the microcode in the V series chips was in fact different in many areas, the chips did not violate any microcode copyright.

NEC argued successfully that for one chip to compete successfully directly against another, the competitor had to have the same functionality with possible improvements (this is very similar to the arguments that Paperback Software and Mosaic are making in the defense of their suit by Lotus). Gray agreed, noting that the Copyright Code was never intended to prevent people from making better replacements as long as the replacements used a significant amount of creativity. The NEC chips were designed to perform just like the Intel chips, only faster and with a few extra features. In order to do that, NEC claimed, certain portions of the microcode would by nature look extremely similar. NEC backed up this claim by creating a second set of 8088 microcode, this time in a "clean-room" environment, meaning that the person creating the microcode never had access to Intel's microcode. The results were that the clean-room code also had many sets of instructions that were similar to the Intel code. NEC said that this proved that small sections of code could arise from actions other than copying, and Gray agreed.

The ruling noted that there is a large difference between the copyright on the microcode and patents that either side owned that might pertain to the chips. The distinction is important because many chip manufacturers own many patents that pertain to various chips. It is common industry practice among the large chip manufacturers to have blanket patent cross-license agreements, as was the case between Intel and NEC. This means that someone who had not cross-licensed Intel's patents could probably not have made compatible chips without violating some patents. In fact, companies who are now creating clones of other Intel chips may run up against those patents if Intel does not agree to license them.

The case stems originally from Intel's marketing of its CPU chips. Before IBM had chosen the 8088 for its first generation of PCs, Intel had no assurances that the 8088 and 8086 would become popular in the market. At the time (late 1970s), if you were a chip manufacturer, the common practice in the chip industry was for you to get other manufacturers to also make the chips that you had designed and were producing. This is called "second sourcing" the chips, and gives potential clients some assurances that, if you go out of business or have to shut down your chip-making facilities, someone else is already making the chips and they could therefore stay stocked. Intel made many such second source deals for the 8088 and 8086 with other chip manufacturers, and this was one of the reasons that IBM felt secure in using the 8088 for its first personal computer.

It is also standard industry practice to cross-license patents when a second source agreement is made. This is to prevent either company from claiming that the other is infringing on a patent and therefore stop the other one from producing chips that have since become popular. Intel and NEC had such a blanket cross-licensing agreement when NEC started producing 8088 and 8086 chips in 1980.

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It's hard to tell on guys with beards.

Profession: Author of the all-time best selling book, *The Complete HyperCard Handbook*, and more recently *Danny Goodman's HyperCard Developer's Guide*; software developer *(Business Class and Focal Point II)*. Described as a genuine "Renaissance Man"!

Hobbies: His idea of a good time is to scan the comprehensive quotes of the great Serbo-Croatian poets while enjoying a good glass of Chenin Blanc. Napa Valley, of course. He prefers non-computer keyboards, like the one on his Bechstein grand piano. A compulsive researcher!

His Page Recognition Software: *OmniPage*, of course. According to Danny: "In preparing a book, or working on a special project, I need to get at information quickly to avoid disturbing my work flow. With *OmniPage*, I can scan virtually any font, or font size, in any column format, and easily place it into an existing file. I'm building a library of articles, relevant to my work, on a variety of subjects."

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CAERE

NEWS AND ANALYSIS

According to the NEC complaint, Intel decided in 1982 that it wanted to change the contracts for its second sources and demanded a new royalty structure. NEC decided not to rely on Intel and designed its own processors that it thought the market would want. Instead of just second sourcing the Intel processors, NEC wanted to market processors that would act just like Intel processors but be faster and have a few extra goodies in them. Thus, NEC created the V series by looking at the microcode that Intel had given them as a second sourcing agent and creating their own microcode from it. In fact, the first two processors that NEC produced could directly replace Intel's CPUs in personal computers. Intel began making threats in public about the legitimacy of the code in the V series, and sales never took off. Intel and NEC settled the dispute in 1983 over patents, but Intel then turned around and threatened to sue over copyright. In 1984, NEC sued Intel to prove that it had not infringed on Intel's copyrights (since the patent cross-license was clear).

The case was heard by Judge William A. Ingram, but he disqualified himself just as he was about to rule because it turned out that he had a tiny amount of Intel stock through a stock club of which he was a member. The case was then heard before Judge Gray and all evidence and motions were heard by late last July. The ruling has three parts:

Microcode is copyrightable—this was widely expected, since microcode is to chips what object code is to computer programs. It has been well established in the courts that object code can be copyrighted, so this came as no surprise. Although NEC had made the argument that microcode should not be copyrightable, most lawyers observing the case felt that this was just legal positioning and not something that NEC as a company took very seriously.

NEC did not infringe on Intel's microcode copyright—Just as two books can have very similar plots and characters without any infringement, two pieces of microcode can be very similar without any infringement. NEC showed that, in order to perform tasks like the 8088 or 8086, it had to produce microcode that performed certain tasks and that that process would inherently cause some of the microcode to be the same. It also showed where the microcode diverged, proved that those portions were significant and the product of the creative process, and showed that the overall microcode was different enough to distinguish the two easily. According to the decision, "expression of the ideas underlying the shorter, simpler microroutines may be protected only against virtually identical copying, and that NEC properly used the underlying ideas without virtually identically copying their limited expression."

Intel did not protect its microcode copyright with proper notice, and therefore lost the copyright—Intel did not require that second source companies put its copyright statement on the chips. In fact, over three million chips (over 10 percent) went out without the copyright notice. Further, after it found out about the copyright problem, it did not move quickly to remedy the situation. Thus, it lost its copyright.

Judge Gray made it clear that this ruling was separate from the infringement ruling. If he had said that NEC didn't infringe because Intel had lost their copyright, Intel could have dragged the appeals process on for at least five years by first appealing the loss of copyright, forcing NEC to then have to appeal the infringement. As it stands, even if Intel can overturn the copyright loss, it has to appeal the infringement ruling separately.

When Intel lost the case, they pretended that they won. They crowed, "All we really wanted to prove was that microcode was copyrightable and we did it." Unfortunately, many newspapers believed them and some even ran headlines indicating that Intel had won the case or that it was a 50/50 split. Few lawyers would agree that losing the copyright to two strategic chips and failing to show infringement could be considered any kind of win, especially when most people took it for granted that Judge Gray would rule that microcode was copyrightable based on his rulings on pre-trial motions.

Intel's general counsel said that "We now have a precedent that our large investment in new products can be protected under copyright laws." If Intel really believes that this is the case, they will have a hard time appealing the decision without tearing it apart. If they try to appeal only one part of the ruling, the appeals judge will look skeptically on Intel's reasoning on why part of the judgment was superb and the rest wrong. Nothing in Gray's ruling indicates that that case was a draw; in fact, he is especially critical of Intel's ability to protect its copyrights.

NEC has to do some thinking in the next few months about how it wants to proceed. Now that they have won the case, they need to decide what to do about damages. In litigation costs alone, the case has cost them millions of dollars. Intel's public statements about the impropriety of the V series chips have clearly caused NEC tens of millions of dollars in lost orders. NEC has shown restraint throughout the trial, keeping its rhetoric against Intel fairly low-key, especially compared to what Intel has said about NEC. If NEC sues for damages, it will take a long time and they will lose even more time on the part of their managers in depositions and testimony; if they don't sue, they may be turning their back on a huge sum of money. At press time, lawyers for both sides said that they are still considering what to do next, and NEC indicated that it would take them a fair amount of time to figure out how much they had been damaged by Intel's claims and the value of what they had lost in preparing the court case.

Other questions also arise out of the case. *Microprocessor Report*, the CPU industry newsletter based in Palo Alto, notes that "Intel is believed also to have allowed 80186/188 and 80286 alternate source manufacturers to produce chips without requiring that they mark them with Intel's copyright notice. As a result, it is possible that one of these

US Charges Japan With Disk Dumping

The US Commerce Department has ruled that Japanese producers of 3.5" disks have been dumping them in the US at unfairly low prices, and it will probably levy a 30-50% tariff on them in the next few months. This, of course, will significantly raise the price of 3.5" disks from Japan. The companies involved include Sony, Hitachi/Maxell, Fuji, and other smaller manufacturers. The original dumping charges were brought by Verbatim, which now manufactures its 3.5" disks in Mexico. Already, the companies in question have had to post bonds equal to the margins that the Commerce Department charges they were undercharging by.

The "unfair prices" claim is based on a finding that the disks sell for less in the United States than they do in Japan. Based on this, the Commerce Department decided that US manufacturers were being materially injured by the Japanese imports. The demand for 3.5" disks is higher in the US than it is in Japan because of the larger number of computers that use them and the fact that American business people use more diskettes per computer than the Japanese.

Japanese companies hold about two-thirds of the US market, and are especially strong in the bulk market (such as software manufacturers and mass duplicators) because the quality of American-made disks is significantly lower than that of Japanese-made disks. The ruling did not take into account the quality difference in diskettes or the fluctuating prices offered both here and in Japan based on offers to get customers to switch between brands.

The 3.5" disk is becoming more popular due to its increased use on the IBM PS/2 and new clones, and it has been used on the Macintosh for over five years. If the Commerce Department raises the prices on Japanese imports by the expected 45%, average retail price for the diskettes will probably also rise by that much, since American manufacturers have traditionally raised prices to match foreign competitors when tariffs were added. Already, many bulk diskette users are hoarding in anticipation of this steep price jump, and many corporate buyers have put in large orders to help buffer the price hike.

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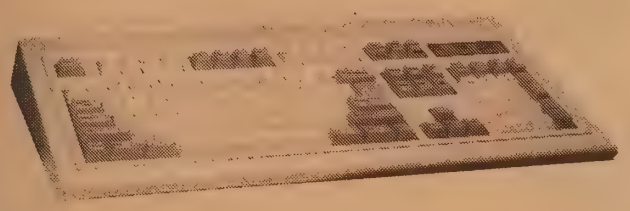

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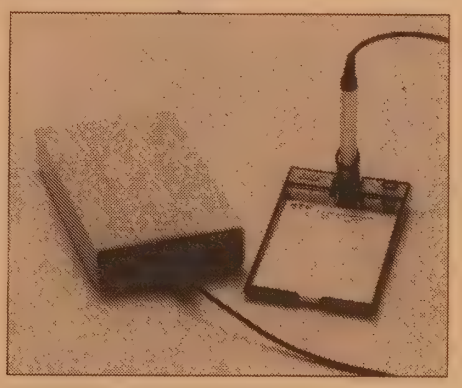

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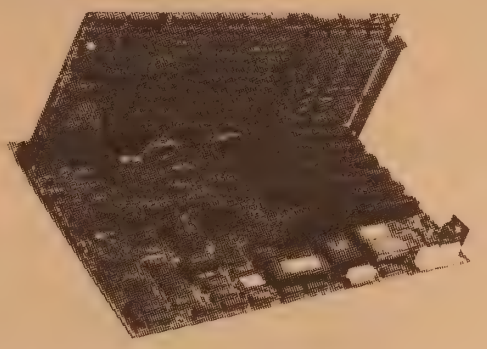

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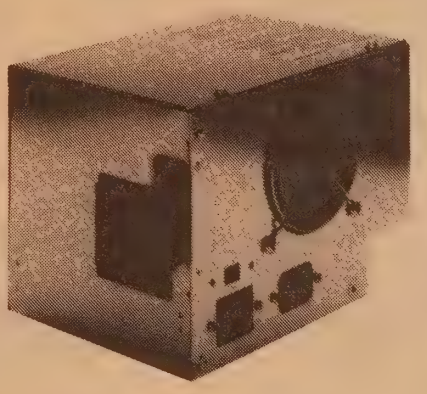

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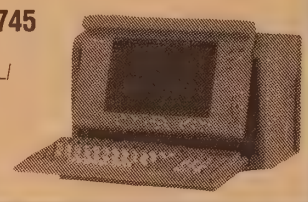

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NEWS AND ANALYSIS

manufacturers (such as Harris or AMD) will challenge Intel's copyright on the 186/188 or 286 microcode, using the NEC/Intel ruling as a precedent." Also, it is not clear who has blanket patent cross-licenses, and how extensive they really are. NEC could team up with another chip maker to extend the V series to be compatible with the 80286 and 80386 around the cross-license of one of these manufacturers. They may even be able to do it themselves. Intel will certainly object, but given how poorly that they have treated their second sources, some may be willing to take the risk.

Atari Sues Nintendo

Nintendo's practice of preventing game manufacturers from developing games for other computers is a monopolistic action, according to Atari Corporation. In a recent suit, Atari Corporation says that it has essentially lost all of the home video game market to Nintendo due to the fact that people who develop games for Nintendo must wait two years before porting the games over to Atari's system.

Atari is not just making vague claims in its lawsuit. It quotes from Nintendo itself in Nintendo's suit against Atari Games (Atari Corporation and Atari Games are completely separate companies). In its suit against Atari Games, Nintendo says that its agreement with game developers forces those developers "to refrain from adapting or offering the licensed video game program for use in certain home video systems for a period of two years." Because of this, few game manufacturers have come out with new games for the Atari game system, and the lack of games has thus significantly hurt its sales. Atari Corporation says that it has lost over $250 million due to this.

Atari Games and its Tengen subsidiary amended its lawsuit against Nintendo, claiming both that Nintendo is using technology patented by Atari Games and that Nintendo is threatening retailers into not selling games made by Atari Games. The patent issue revolves around the method in which the games scroll on the screen. Atari says that this method is covered in its 1984 patent. The patent, number 4,445,114, is for the hardware and software which causes smooth scrolling of video displays.

The harassment issue comes from letters and phone calls that retailers have received from Nintendo representative about selling Atari Games cartridges for the Nintendo machine. Some retailers have felt pressured to drop the Atari Games cartridges in order to assure a supply of games from Nintendo. Atari says that this heavy-handed marketing is illegal and is costing Atari Games millions of dollars. Atari Game's suit charges Nintendo with:

•"Threatening the prosecution of lawsuits against third parties—under circumstances where Nintendo knew that such lawsuits would have no legal basis and/or had no intention of carrying out the threats—unless such third parties would stop

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SPEED	12MHz/0	10MHz/1	12MHz/0	8MHz/1	10MHz/1	10MHz/0	12MHz/0	16MHz/0	16MHz/0	20MHz/0	25MHz/0
KBRD SWITCHABLE	YES 8MHz	YES 8MHz	YES 8MHZ	NO	YES 8MHz	YES 8MHz	YES 8mhZ	YES 8MHz	YES 8MHz	YES 8MHz	NO
RATINGS											
Norton SI	N/A	9.8	13.7	7.7	9.8	11.2	13.7	18.4	22	22	28.5
Nips	N/A	1.21	1.7	0.96	1.21	1.4	1.7	2.2	2.66	2.65	3.36
Landmark	N/A	5.2	8.45	4.1	5.2	6.8	8.4	12.3		13.6	N/A
INTERNAL											
Memory	256K	512k	1MB	512K	512K	512K	1MB	1MB	1MB	1MB	1MB
Controller	FLOPPY	1:1	1:1	REG	REG	REG	1:1	REG	1:1	1:1	1:1
Floppy Drive	360K	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB
BIOS	AMI	AMI	AMI	AMI	AMI	AMI	AMI	AMI	AMI	AMI	PHEONIX
Power supply	150watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt
Cache	NO	NO	NO	NO	NO	NO	NO	64K	NO	NO	64K
Clock	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Ports	NO	1S/1P	NO	NO	NO	2S/1P	NO	NO	NO	1S/1P	2S/1P
Slots	0 8-bit	6/2	4/4	6/2	6/2	6/2	4/4	6/2	0 16-bit	6/2 32-	5/1/02
Keyboard	101 Key	101 Key	101 Key	101 Key	101 Key	101 Key	101 Key	101 Key	101 Key	101 Key	101 Key
EXTERNAL											
Chassis	"baby AT"	small	small	full size	full size	full size	full size	full size	small	full size	full size
1/2 Ht. Bays	4	3	3	5	5	5	5	5	3	5	5
Reset Switch	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes

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2400B Modem	99
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8088 Hard disk RLL cont.	65
80286 Controller MFM/RLL	119/145
Everex 3MB EMS (Lim 4.0)	85
Paradise VGA+/16	339
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Qume Scrip Ten Laser (Postscript 3MB Memory, 10ppm)	3,495
Panasonic 1091i	199
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Fujitsu 360K/1.2MB	$69/89
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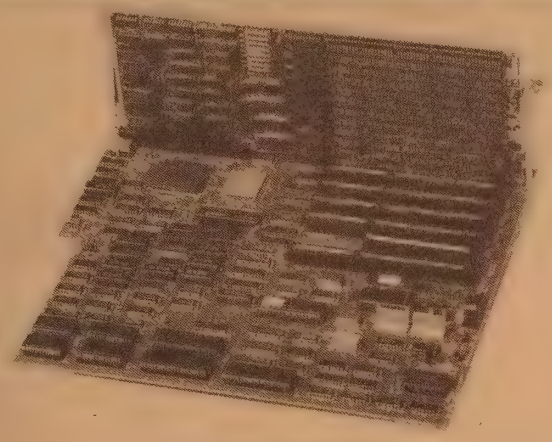

FEATURES

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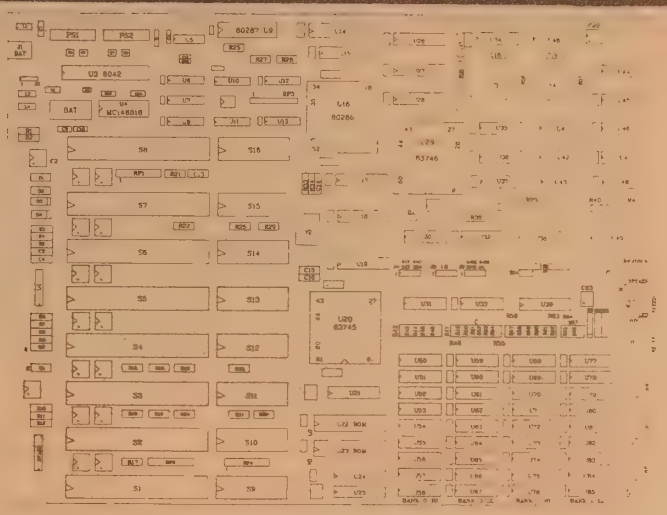

FEATURES

- 6/12 MHz, 1 wait state
- Intel 80286-10 cpu
- Award Bios (built in setup)
- Same size as IBM PC/XT
- (2) 8 bit slots (6) bit slots
- Support 80287
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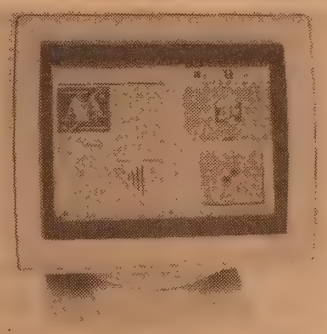

WINDOW
GEM

BENEFIT	FEATURE
Compatibility	IBM PC/XT/AT, PS/2 30
Widest	29KHz horizontal scan
Scanning	Interlaced
Horizontal lines	1248
Vertical lines	798
Superior display	1024 x 768
Resolution	
Ergonomically designed for ease and comfort	Built-in tilt and swivel base,
CRT	15" Diagonal, 90 degree, flat screen
Display size	230mm x 170mm
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Color	Paper white phospher, Non-glare etched screen
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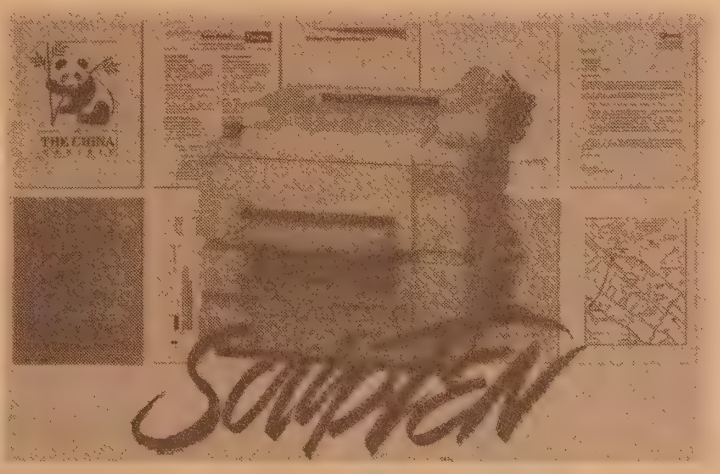

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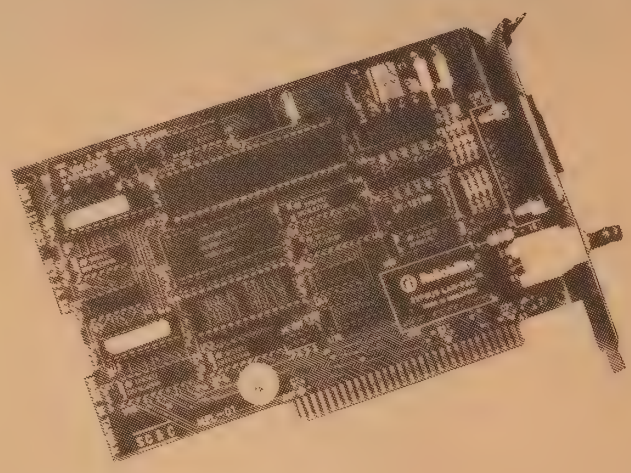

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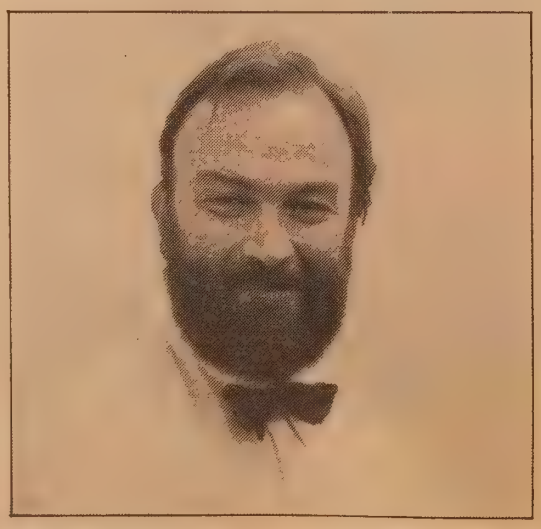

UNIX?

If **grep**, **chmod** and **nroff** are getting you down, find help fast in the *MicroTimes* UNIX column by Bennett Falk.

MICROTIMES
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NEWS AND ANALYSIS

selling the Atari/Tengen cartridges, return unsold inventory of the cartridges and refuse in the future to accept delivery of any cartridges,

•"Improperly and maliciously threatening distributors, retailers and the consuming public that product warranties that would otherwise apply to Nintendo video game machines would be rendered ineffectual upon the use of Tengen and Atari products, and,

•"Otherwise wrongfully and maliciously threatening dire economic consequences to entities that would do or would continue to do business with Tengen and Atari."

This suit follows on Atari Games's suit in December charging that Nintendo was illegally keeping competitors out of the market by controlling the manufacture and distribution of the game cartridges that work with the Nintendo machine. Later, the Software Publishers Association (SPA) has supported Atari Games's claim and says that the Japanese giant has caused the shortage of cartridges that plagued many retailers this Christmas. Nintendo then sued Atari Games for breach of contract, unfair competition, trademark infringement, and violating the Racketeer Influenced and Corrupt Organizations (RICO) Act, based on Atari Games putting out their own games that work with the Nintendo system without Nintendo's permission. Nintendo had sued Atari Games because Atari Games had reverse-engineered the copy protection scheme in the Nintendo game controller and began to sell cartridges without Nintendo's permission.

Communications And The Small Business User

1989 is supposed to be the year of the network (yet again), the year of really useful electronic mail, and the year of fax-in-a-computer. It is not clear, however, if any of these will be true for the individual user. With their valiant attempts to keep the almost-mythical Fortune 500 happy, the software and peripheral industries have ignored or barely noticed that the majority of computers which are used heavily are in the hands of small businesses. These are the people buying much of the innovative software (as compared to mindlessly buying *1-2-3* or *dBASE* because they were told to) and most of the interesting peripherals. But for these people, most of the advances that are promised for this year will be of almost no interest.

A few years ago, the computer industry realized that they were not enticing new people to buy computers just by touting power and efficiency. Apple was probably the first to see this and started buzzword marketing. The most effective buzzwords, Apple thought, were ones that were invented by the company, so that none of their competitors could hop on their bandwagon too quickly. Thus, "desktop publishing" was born. By the time other companies took this phenomenon

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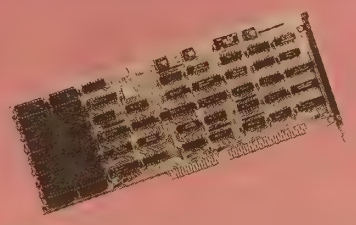

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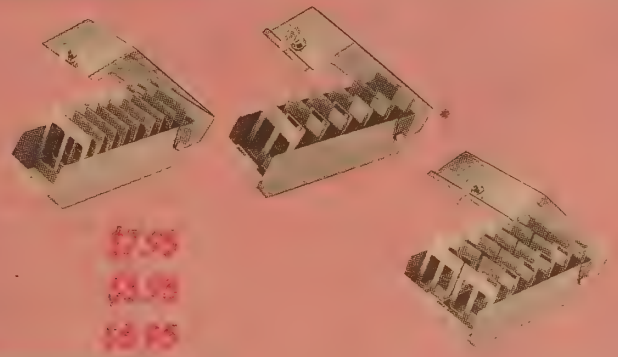

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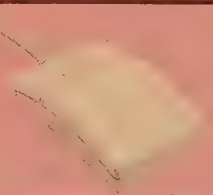

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NEWS AND ANALYSIS

seriously, Apple had gotten quite a large piece of the pie. So other manufacturers started their own buzzword marketing, with mixed results.

"Networking" has been one of the most praised buzzword markets for microcomputers because it is easy to get into and, hey, all the mainframe and minicomputer people do it all the time. The networking marketing craze took hold in 1985 and continues unabated. However, the plethora of networking systems confused and scared many people away from buying a network, and many of these people noticed that they were doing just fine without networks.

Small companies with under five computers are rarely networked. The reasons for this vary, but they mostly come down to the small improvement in efficiency versus the high cost (for hardware, cabling, and software) and high maintenance associated with networks. More than half of all companies with a few computers use the "sneakernet" approach: put the information you want to share on a floppy and walk down the hall with it. In companies with large files, many have put tape backup systems in each computer and are carrying tapes around the office. With internal tape backup systems retailing for under $350, this method works well. Many small companies that do have networks forsake high speed whizzy systems for inexpensive, easy-to-cable, and easy-to-maintain systems like TOPS from Sun.

Electronic mail has been around for many years, longer than personal computers. It became popular in the last few years as a good method for people who have modems to communicate. However, most of the good electronic mail software that was released only worked if you were on a local network. Again, this excluded the majority of users since they weren't on a network. The short-sightedness of this approach is becoming apparent since none of the electronic mail software is achieving a perceptible presence in the market. Manufacturers of electronic mail software are being bought out and sold almost like a commodity.

The state of dial-in electronic mail such as MCI Mail and CompuServe is not much better. For some reason known only to the bureaucrats, there are no electronic mail services that have good or even reasonable user interfaces. Electronic mail is absolutely bewildering to many computer users, even the ones who have figured out how to navigate through the arcane command structures of popular software. Since most electronic mail services have only limited (if any) communications between services, you have to subscribe to at least three to be assured that the people with whom you want to communicate will be able to find you. To make matters worse, very few modem programs have addressed the interface problems to any depth.

So now we have this year's (or was it last year's?) new buzzword marketing plan: fax-in-your-computer. There are supposed to be three million fax machines in use in the US by the end of this year,

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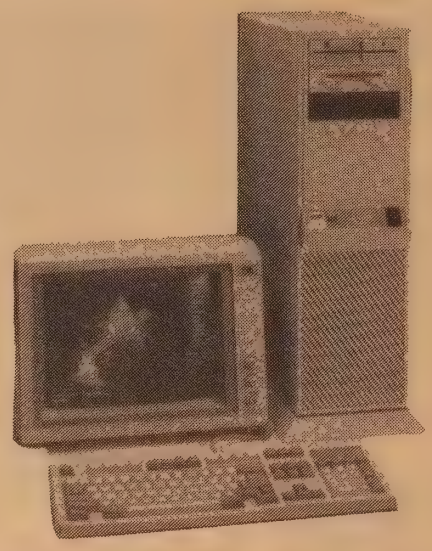

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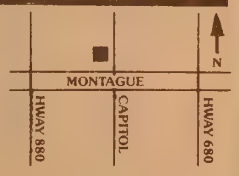

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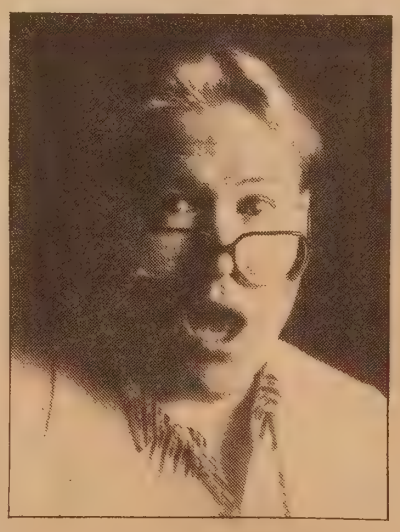

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NEWS
AND ANALYSIS

which does not say much, since there are at least that many already in use in Japan, and they have half of our population. A fax machine in your office is a wonderful thing, as long as the people with whom you do business also have one. Basically, a fax machine lets you feed in sheets of paper, have them transmitted over the phone lines at quite high speed, and be printed on the receiving machine. They cut down on next-day delivery costs because you can get it there instantly for less money, and they cut down on telephone costs because you can write what you were going to say and send it by fax. A great example of people who use fax (and should use it more) are bookstores who have to order from dozens of publishers every week. Instead of requiring a person to stay on the line and read numbers and titles aloud, a simple fax from the bookstore to the publisher gets the order in with almost no sales time wasted on either end.

Some technoid saw this happening and thought, "Hey, now that we have scanners and great printing capabilities, why not take the guts of a fax machine and put it into a peripheral board inside a computer?" That seemed logical: you could easily teach programs that printed things out to "print" them to the fax board instead, drawings could be converted to fax images, and so on. A market was born. Products began appearing in 1988 and are promised to come on strong in 1989. The new era of fax communications via computers is upon us.

Or is it? One of the huge drawbacks to fax-in-your-computer is that your computer must be on 24 hours a day in order to receive incoming faxes. Few people leave their systems on all the time. Even those who do leave their systems on experience system failures (software and hardware crashes) during unattended hours. Also, many of the boards which supposedly work in the background put a huge drain on the process running in the foreground.

Given the amount of junk fax mail that is flowing through the ether these days (by some estimates, over 10% of all faxes are unwanted), that kind of system degradation may not be worth it. Most importantly, buying a fax peripheral for your computer means that you think that everything you want to fax will be generated in your system, and that everything you receive you want to view on the screen. This is rarely the case. If someone in your company types up a letter and wants it sent by fax, you're out of luck (unless you also own an expensive scanner). If someone sends you a 30-page memo by fax, you had better have lots of hard disk space.

This doesn't leave the small company in a very good position for communications. Until small networks become much cheaper and easier to use and until electronic mail becomes even close to as easy to use as the much-maligned USPS, most computers will still be islands. The situation does, however, leave lots of room for enterprising software companies who are willing to completely forsake the Fortune 500 to bring programs aimed only at small businesses to the market. ■

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Power Surges, Glasnost, And War Stories

This offers expanded meaning to the concept of "system sharing" —proposals herewith placed in the public domain.

Self-Protecting Processors

Some innovative horseless carriage maker put an electric starter on their hand-crank sputter-buggies—and undoubtedly reaped handsome profits from that luxurious auto "option."

It's time for computer makers to finally offer a reasonably inexpensive short-term battery backup—as a compact, integrated option for their systems? As a designed-in option, it should cost a hundred dollars or less to support the system for one to five minutes—long enough for orderly shutdown by the user.

While they're at it, they should spend the extra $5-$10 to include robust spike and noise suppression for a computer's power supply. Modem makers should do the same for their phone line connections.

It would cost little; serve well; and—with breast-beating publicity—it would attract every computer user who has ever lost many hours of work due to a power glitch, or who has had expensive equipment or files fried due to spikes or brownouts.

LapTop Makers: Lie Down

Manufacturers of laptop computers should universally allow their flat-screen display to lie low. (Many do; all should.) Let the screen be placed in any position from completely vertical (rarely useful) to completely horizontal—to completely removed or replaced.

Some mistake-makers have illustrated amazingly poor human engineering by marketing laptops with screens that must remain almost vertical. Consumers should avoid these ill-engineered errors.

While we're whining: It's infuriating to find an otherwise robust laptop degraded by a tiny screen, secreted in a large top. Ditto for a half-screen in a half-top. At the least, serious users should be offered the additional-cost option of an adult-sized flat-screen that fills a full-sized laptoptop.

An Anti-Communist Plot

Tens of thousands of long-unused old computers are languishing in closets. "Old," of course, means 8-12 years. Given Glasnost, let's try sending the old, dust-laden, obsolete boat-anchors to citizens in Iron Curtin countries —and in U.S. supported dictatorships. When possible, they should include modems and encryption software.

A key element of this proposal is that the units must go directly to citizens—not to the governments.

Think of the possibilities: Computers are information processing tools—and information is prerequisite for any hope of freedom or justice. Further, consider what modems and encryption tools would do to evesdropping by internal security services.

Yes, that is a fantasy, but probably not realizable. Governments know that computers in the hands of their citizens are dangerous. Please note that the NSA and DoD are lobbying hard to get Congress to restrict citizen's access to computerized databases and restrict citizens' use of bulletin board systems.

Old War Story; Cold War Story

That reminds me: Some years ago, I was on a lecture tour in Japan and had lunch with Tony Tokai, then President of Commodore-Japan. At the time, Commodore PETs (I said it was some years ago) were as scarce as hens' teeth in the US—but I found out Tony could get all he wanted of these US-made micros in Japan. Simple; he was selling them for perhaps a kilobuck more than Commodore could peddle* them for in the U.S.

Furthermore, the U.S. had trade prohibitions against selling computers to China—gotta keep them evil commies contained (I *said* this was some years ago!). However, Japan had no such prohibitions—and Tony was making much loot for his Japanese company by selling PETs to China.

I think this is called, "How Political Paranoia Helps Other Nations Preempt the United States"—surely a topic for a future article. Prepublication comments herewith solicited.

*Digression-Squared

The peddle pun was too good to miss. 'Twas an affectionate ref to the indefatigable Chuck Peddle—giving much-due credit to the guy who talked Jack Tramiel (then Potentate of Commodore) into letting him design the PET as Commodore's first micro, which could have trampled Radio Shack if Tramiel had had better marketing vision.

But this is about Chuck. He really should have more recognition than the industry has given. Prior to the PET, Chuck was responsible for MOS Technology's 6502 microprocessor—which Woz then used to create his Apple.

And, after Commodore, Chuck headed the Victor Technologies roller-coaster. He took it to its height by guruing one of the first PC clones—that was better designed, more powerful, and less expensive than the IBM PC. Sadly, he also rode the underfunded Victor to its (near?) bankruptcy, trying to do too much with too little.

Unstoppable, he has popped back with Tandon, offering removable, shippable Winchester disk subsystems. Of course, I haven't talked to him for three or four months, so he's probably innovating some new venture by now.

Quickies

Over the edge: Perhaps we should call Chuck Peddle "Occam Man." John Wakerly has noted that "occam," spelled backwards, is pronounced "macho" —which I choose to somewhat redefine as risk-taking by those people of all sexes who choose to live with the excitement, danger, and potential

Governments know that computers in the hands of their citizens are dangerous. Please note that the NSA and DoD are lobbying hard to get Congress to restrict citizens' access to computerized databases and restrict citizens' use of bulletin board systems.

rewards of the cutting edge; those innovators who convert Present into Futures. (Yes, I too, had to look up "Occam's razor.")

Notes of a long-ago luncheon: George Morrow said he wanted a CD PROM. Perhaps Radio Shack's long-announced writable CD will fulfill this fantasy—when it someday becomes fact. George also says his next company will be named Clones R Us. That, from the ex-mathematician and stimulating symbol manipulator whose other companies have included Morrow's Microstuff and Thinkertoys.

End view: We're waiting to see one of those "Baby on Board" signs that says "This Space for Rent."

Should You Get A "VC"?

Among the multitude of abbreviations used in computing—e.g, RAM, ROM, MHz, CPU—many folks consider "VC" to be one of the most important . . . and most infuriating. Without VCs, most of our current and future technology would not exist. On the other hand, they are commonly cursed by techno-makers.

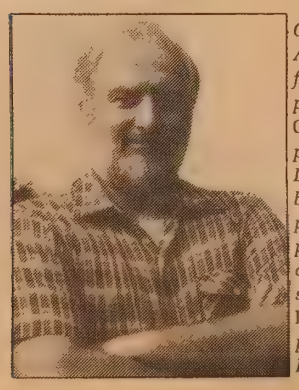
These are the much-sought and much-maligned venture capitalists—also known as "vulture capitalists" by some experienced loot-seeking logicians.

I've seen more than a few microfolks get burned and get enriched by VCs. Thus, my queue of talk-about topics has notes and warnings for business-naive inventors and technologists regarding how to deal with VCs.

But, before belching forth observations regarding these controversial technology "support tools," I herewith solicit others' experiences and suggestions—good and ill—from both VCers and VCees.

Suggestions To Share

Send suggestions to Jim Warren, Realizable Fantasies, 345 Swett Road, Woodside, CA 94062. Published proposals will be attributed to their authors unless anonymity is requested. ■



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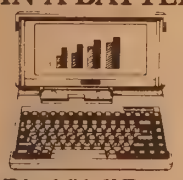

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Toshiba Expresswriter 311 Laptop printer	$405

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Belmont, CA 94002
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MicroTimes Readers Poll

In an effort to focus on the issues and technologies that most interest you, we'd like you to fill out this Readers' Poll. This will help us provide you with information and coverage to help you get more out of your computer hardware and software. Tell us who you are, what you use a computer for, and what you like most and least about *MicroTimes*. Your input will help us create a computer magazine worthy of your continued support and interest. If you would like a chance to win a year's subscription to *MicroTimes*, fill in your name and address. We will give away subscriptions to 25 lucky winners. If you don't want a chance to win, you may remain anonymous. Please return this poll by April 15, 1989 to:

MicroTimes Readers' Poll
5951 Canning St.
Oakland, CA 94609

Who are you?

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

Employed by: _____

Age: _____

Sex: _____

Job Title: _____

Annual Income: ❑ 10-20k, ❑ 21-30k, ❑ 31-50k, ❑ over 50k

Where do you live?

❑ Northern California
❑ Southern California
❑ Out of state (Please specify) _____

What operating system(s) do you use?

❑ CP/M
❑ MS/PC-DOS
❑ OS/2
❑ Macintosh
❑ UNIX/XENIX, etc.
❑ Other (Please specify) _____

What computer(s) do you use?

❑ IBM PC/XT/AT or compatible
❑ PS/2 or compatible
❑ Macintosh
❑ Apple II
❑ Amiga
❑ Atari
❑ Laptop (Please specify) _____

❑ Other _____

What peripherals do you have?

❑ External disk drive
❑ Hard disk
❑ Tape Backup
❑ Modem
❑ Dot matrix printer
❑ LQ Printer
❑ Laser printer
❑ Large-scale display monitor
❑ MIDI
❑ Scanner
❑ Video digitizer
❑ CD-ROM

❑ Others _____

What software applications do you most frequently use?

❑ Word processing
❑ Desktop publishing
❑ Desktop presentations
❑ Non-relational database
❑ Relational database
❑ Spreadsheets/Accounting
❑ MIDI
❑ Graphics
❑ Games
❑ Educational
❑ Time/project management
❑ AI
❑ Telecommunications
❑ Video
❑ CAD/CAM
❑ Others _____

Why do you read MicroTimes?

_____

_____

_____

What part of MicroTimes is most valuable to you?

❑ Reviews
❑ Industry Issues
❑ News And Analysis
❑ Features
❑ Columns (Please specify)
❑ Buyers Guides
❑ Mac @ Work
❑ User Group/BBS listings
❑ Calendar of Events

_____

What part of MicroTimes do you read least?

❑ Reviews
❑ Industry Issues
❑ News And Analysis
❑ Features
❑ Columns (Please specify)
❑ Buyers Guides
❑ Mac @ Work
❑ User Group/BBS listings
❑ Calendar of Events

_____

What issues or technologies would you like to see MicroTimes focus on during 1989?

_____

_____

_____

What types of articles would you like to see more of?

❑ Product reviews
❑ Opinion pieces
❑ Interviews
❑ Columns
❑ How-to articles
❑ Question/Answer
❑ News/Analysis
❑ Lists/resources

❑ Other _____

What topics would you like to see covered more often?

❑ Business Computing
❑ Graphics
❑ DTP
❑ MIDI
❑ Telecommunications
❑ Industry Issues
❑ Laptops
❑ Academic Computing
❑ Workstations
❑ Operating systems
❑ Connectivity/networking
❑ Games
❑ CAD/CAM
❑ dBASE
❑ UNIX
❑ Programming

❑ Other _____

Other comments:

_____

_____

_____

_____

_____

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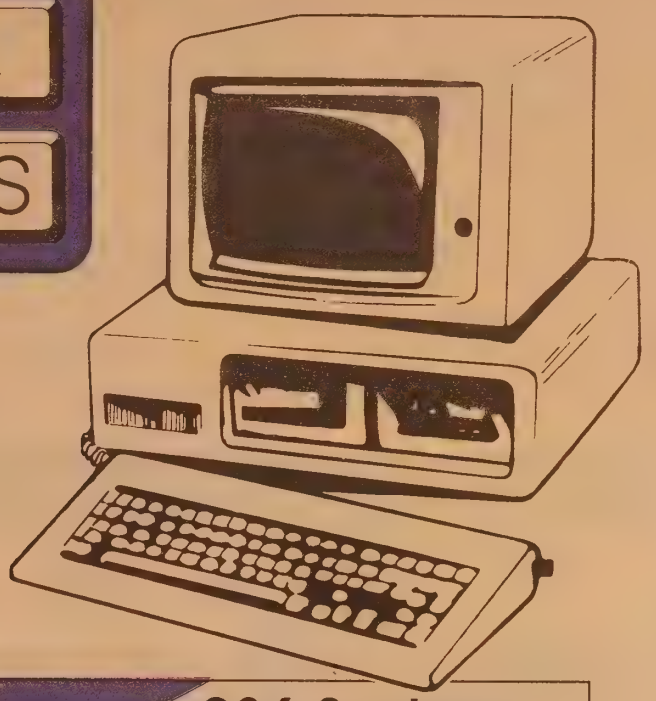
NORDIC COMPUTERS



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GREAT PRICE

Featuring Mylex board
Mylex M1-386-20
20 MHz—0 Wait State
Landmark = 30MHz
64K Cache Memory
8 Expansion Slots
Socket for 80387
1MB/Upgradable to 8 MB on Board
Hard Disk Floppy Controller
1.2 MB Drive
Enhanced Keyboard
Parallel Port/Serial Port
Clock/Calendar

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286 System

GREAT PRICE

10MHz—0 Wait State
Landmark = 13 MHz
640K RAM
Hard Disk Floppy Controller
1.2 MB Drive
Monographic Printer Card
Monochrome Monitor on Swivel
Enhanced Keyboard
Parallel Port/Serial Port
Clock/Calendar

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Add for Seagate disks:
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- Add $50 for 12 MHz
- Add $449 for 20 MHz
- Add $195 to upgrade to 1 megabyte
- Add $395 for EGA

TURBO 8088

10 MHz
1 20 MB Hard Disk
1 Floppy Drive
640K RAM
Monochrome Graphics Card
Monochrome Monitor on Swivel
Keyboard
Serial/Parallel Port
Clock/Calendar

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Upgrade CGA Color Monitor $195
EGA $395

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Epson LX 800	$179
Epson FX 850	$349
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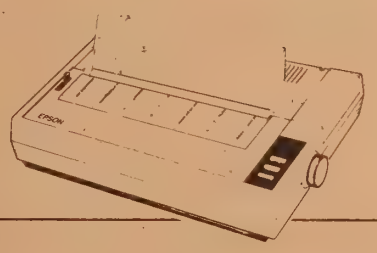
Epson LQ 500	$295
Epson LQ 850	$545
Epson LQ 1050	$749



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1200 Baud Modem	$79
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Monochrome Graphics Card	$55
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EGA Card	$165

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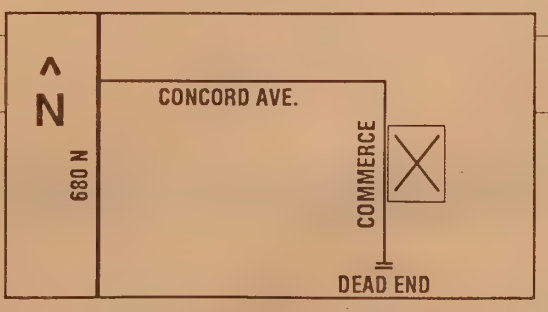

M-F 10:00-6:00 open Sat 10:00-4:00

XT/AT ARE TRADEMARKS OF IBM

14th Faire Brings Exhibits, Seminars To San Francisco

Garage Exhibit Of Early Computers Also Featured

The West Coast Computer Faire moves back to a familiar old location this year, Brooks Hall and Civic Auditorium in San Francisco. The Faire will last fewer days and have shorter hours than in the past, but attendees will be able to visit until 8 pm on Friday night, the first time the Faire has been open in the evening.

From Friday March 17 to Sunday March 19, over 375 vendors of hardware and software will display their merchandise at the Computer Faire. Products from every category and in every environment (DOS, Macintosh, UNIX, PS/2, etc.) will be featured at the event.

In addition to the exhibits and at no extra charge, there will be 47 conference sessions over the course of the show, featuring more than 100 industry experts. Networking, desktop publishing, and hypermedia will be major topics of these conferences. In keeping with the Faire's theme of "Legends of the West," a garage exhibit of early personal computers will be shown. Actual prototypes from Hewlett-Packard, Apple, and other firms that trace their beginnings back to a garage will be on exhibit.

Tickets to the 14th West Coast Computer Faire are available in advance for $10. Write to West Coast Computer Faire Registration Dept., 300 First Avenue, Needham, MA 02194.

WEST COAST COMPUTER FAIRE SCHEDULE BY DAY

Friday, March 17, 1989

Time	Session	Title
11:00-12:00	A-1	Keynote: Mainframe Power on the Desktop: Finally a Reality
12:00-1:15	B-1	Hypermedia Overview
12:00-1:15	C-1	Next Generation PCs
12:00-1:15	D-1	Desktop Publishing: Market Overview
12:00-1:15	F-1	What's Nu: Mac II Peripherals
12:00-2:30	I-1	Choosing the Right System
1:30-2:45	E-1	Operating System Debates
1:30-2:45	G-1	PC to Mac Connectivity
1:30-2:45	F-2	EISA vs. MCA and the Future of the '86 Family
1:30-2:45	H-1	Project Management
3:00-4:15	B-2	HyperCard Users Report
3:00-4:15	D-2	Desktop Publishing: Business Applications
3:00-4:15	E-2	Choosing Computer Languages: Understanding the Tradeoffs
3:00-4:15	F-3	Bit-Mapped Technology Trends
3:00-4:15	H-2	Databases
4:30-5:45	C-2	The Desktop Video Revolution
4:30-5:45	D-3	Desktop Publishing: What's Around the Corner?
4:30-5:45	E-3	Friendly User Interfaces Aren't
4:30-5:45	G-2	Small LANs: From Pie in the Sky to Pitfalls
4:30-5:45	H-3	Spreadsheets
6:00-7:15	J-1	Hands-On HyperCard
6:00-7:15	J-2	CASE for PCs
6:00-7:15	J-3	Software Development

Saturday, March 18, 1989

Time	Session	Title
10:00-11:15	A-2	The Impact of Viruses, Worms, and Trojan Horses
11:30-12:45	B-3	Tips for Stackware Developers
11:30-12:45	C-3	Interactive Technologies for Computer Entertainment
11:30-12:45	F-4	Shareware: A Valid Alternative
11:30-12:45	H-4	Word Processing Packages
11:30-12:45	H-5	Investment Software/On-Line Services
1:00-2:15	A-3	The World According to Pournelle
2:30-3:45	B-4	HyperCard Magic Tricks
2:30-3:45	D-4	Left Brain Desktop Publishing
2:30-3:45	F-5	Computer Games for the 1990s
2:30-3:45	H-6	Personal Information Managers
2:30-5:00	I-2	Setting Up a Home Office
4:00-5:15	D-5	Low-Cost CAD
4:00-5:15	J-4	Older Machines: Dusty But Not Forgotten
4:00-5:15	J-5	The Return of the Homebrew Computer Club

Sunday, March 19, 1989

Time	Session	Title
10:00-11:15	A-4	Mac vs. a World in Transition
11:30-12:45	F-6	Weird and Wonderful Gizmos: A Review of Notable Peripherals
11:30-12:45	G-3	Bulletin Boards, E-Mail, and Conferencing Systems
11:30-12:45	J-6	Professional Applications
11:30-12:45	H-7	High-End 386s
11:30-2:00	I-3	Your Kid and Your Computer
1:00-2:15	C-4	Voice, Music and Animation
1:00-2:15	D-6	Desktop Publishing for the Graphics Professional
1:00-2:15	J-7	Exotic Software
1:00-3:30	I-4	So, You Want To Be a Software Entrepreneur?
2:30-3:45	A-5	Where Do We Go From Here?

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Power Supplies

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- Epson LX800 ..... $195
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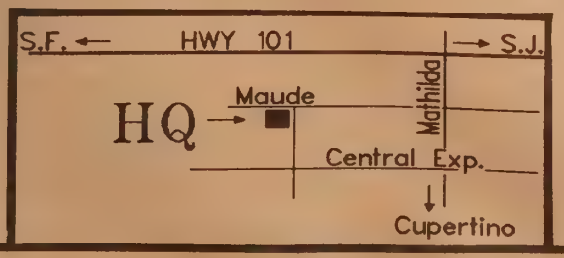
- Epson LQ850 ..... $545
- Epson LQ1050 ..... $760
- Star NX1000 ..... $172
- Star Rainbow Color Printer $229
- Star NX2400 ..... $340

Keyboards

- 84 Keys for AT or XT $33
- 101 Keys Enhanced Keyboard $44
- 101 Keys Tactile Response Keyboard $55
- 101 Keys Keytronics Keyboard $55
- 101 Keys Maxiswitch Keyboard $59



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- ST238 30MB 65ms $207
- ST251 40MB 38ms $330
- ST251-1 40MB 28ms $400
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- Fujitsu 2244E 72MB ESDI 25ms $449
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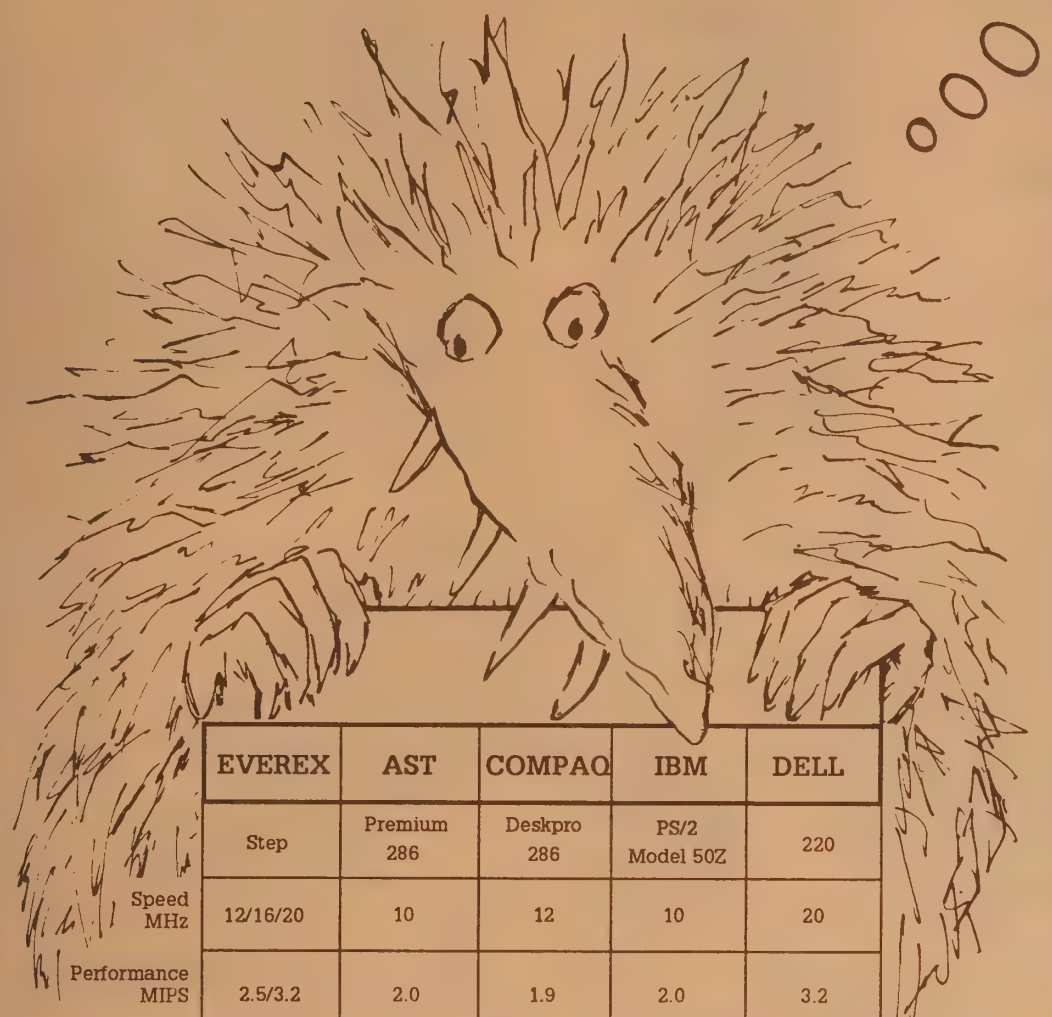
EVEREX

COMPUTER SYSTEMS DIVISION

Some people say we just outdid our Competition



	EVEREX	AST	COMPAQ	IBM	DELL
	Step	Premium 286	Deskpro 286	PS/2 Model 50Z	220
Speed MHz	12/16/20	10	12	10	20
Performance MIPS	2.5/3.2	2.0	1.9	2.0	3.2
RAM on Motherboard	1-4MB	512K-2M	512K-2M	1MB	1-4 MB
HD Interleave	1:1	1:2	1:2	1:2	1:1
Programmable LED	Yes	No	No	No	No
Slots/Drive Bay	8/5	8/5	8/5	3/2	3/2
OS/2 Support	Yes	Yes	Yes	Yes	Yes
Warranty	1yr on-site	1yr carry in	1yr carry in	1yr carry in	1y on site
386 Expandability	Yes	Yes	No	No	No
AMMA Cache	Yes on 28620	No	No	No	No

Often in this crazy industry, a newcomer seems to suddenly leap into the scene and takes the industry by storm. Such is a company called **EVEREX**.

In less than a year, **EVEREX** has introduced and delivered more models of computers than most companies since the dawn of our industry. From its 286/12 to its 386/25, these computers offer uncompromised performance at unsurpassed values. **INTERNATIONAL MICRONET** takes great pride in offering the **TOTAL EVEREX SOLUTION.** Call us for a complete line of Everex products. You'll be assured of quality service, knowledgeable staff and competetive prices.

1. Speed
EVEREX offers a complete line of computers unsurpassed in speed. These include the **STEP** 286/12, 286/16, 286/20, 386IS, 38616, 386/20 and 386/25, all with true 0 wait state processing.
2.. Performance
Computers are generally measured in terms of their ability to process data. Generally, the industry standard for such a measurement is MIPs or millions of instructions per second. Just take a look at the chart for your own conclusion.
3. RAM
All **EVEREX** 286 computers are expandable from 1 to 4 megabytes of RAM. To support the true 0 wait state processing, memory chips are tested to 60ns -- almost twice as fast as most of our competition.
4. Hard Disk Interleave
Hard disk controller in **EVEREX** computers comes standard with 1:1 Interleave. As a result, data transfer rates -- (the bottleneck in most fast computers) are twice as fast than conventional 1:2 hard disk controllers.
5. Programmable LED
The **EVEREX** computers give you full Diagnostics upon power up in a very readable 8 digit display in the front panel.
6. Slots/Drive Bays
EVEREX computers are available in small and large footprints. The small footprints have 8 available slots and 5 half height drive bays.
7. DOS 3.3 is standard. **8. OS/2**
Most vendors like to hide the fact that OS/2 is vendor level specific. This means vendors seeking to have OS/2 compatibility have to provide you with their version of OS/2. **EVEREX** has a version OS/2 available as an option for their machines.
9. Warranty
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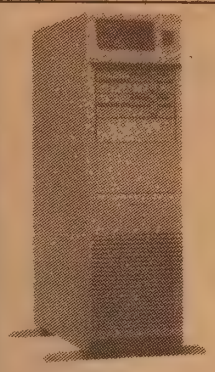

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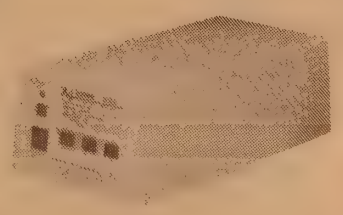

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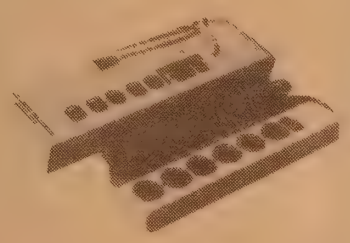

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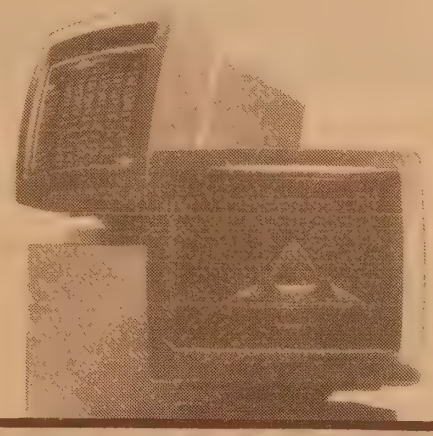

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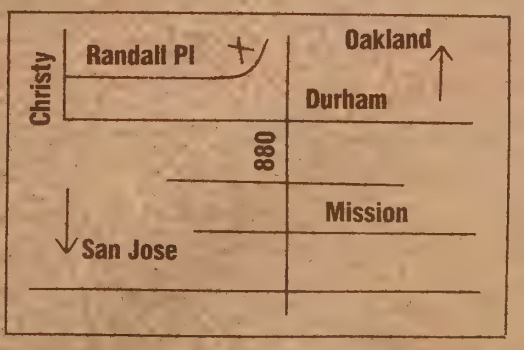


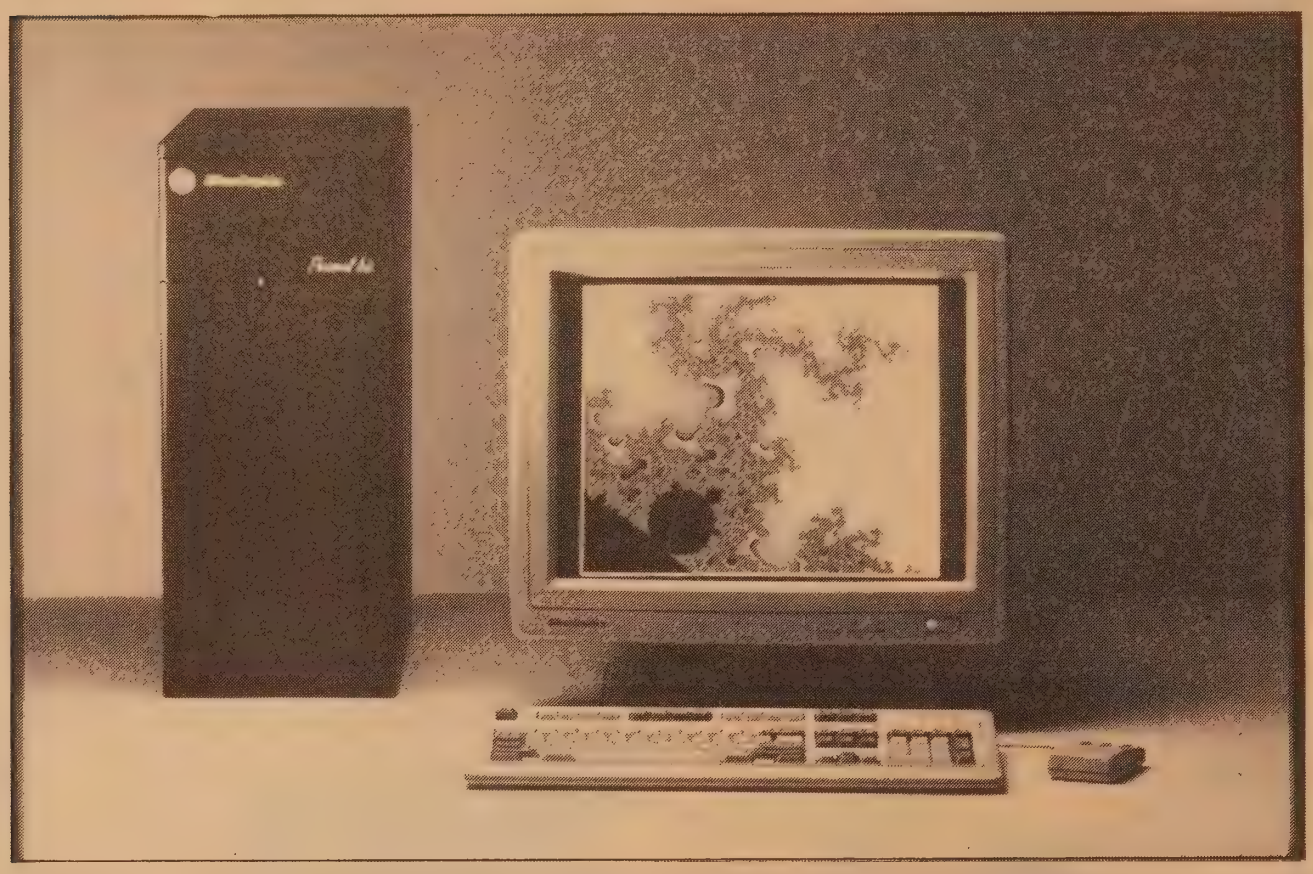
3D Graphics:

The Shape Of Things To Come

Silicon Graphics Prepares For The Volume Market Of The '90s

By Mary Eisenhart

PHOTO: SILICON GRAPHICS



The Personal Iris brings real-time three-dimensional graphics computing to a new level of affordability.

On the screen, an aircraft rotates in black space, its sleek surface bathed in multicolored lights from multiple sources. It allows itself to be viewed from all angles, letting the viewer zoom in for a closer look or out for the grand view.

You're in a tank, threading your way down the corridors and around the corners of a maze—at a rate of speed and instability that sets the motion-sickness-prone to begging for mercy.

There's a checkered room rotating around the screen. Inside the room is a little purple cube which purports to be made of Jello. As it bounces off the checkered walls, its shape changes to reflect impact and returns to normal as the cube becomes airborne.

"It's really a mind-expander, isn't it?"

—Silicon Graphics President/CEO Ed McCracken

Watch out, Macintosh. Watch out, IBM. Watch out, Sun.

Silicon Graphics, whose high-end, RISC-based, 3D graphics workstations have for some years been a mainstay of niche markets from video to mechanical design to aerospace, is taking aim at the under-$20,000 workstation market. The key element in its strategy: the Personal Iris, which starts just under $16,000. It runs the same software as SG's high-end, multiple-processor systems and, like its more sophisticated and expensive brethren, manipulates three-dimensional graphics in real time.

It's hard to exaggerate the sheer emotional impact of your first encounter with the Personal Iris. Especially if you've been in the habit of going to the mall while your Mac II struggles with fractals, or wishing that wire-frame model on your 386 bore some resemblance to *anything* in the real world.

The Personal Iris, which runs Irix, Silicon Graphics' licensed version of UNIX, includes some strategic features not usually seen on UNIX systems. There's a comfortable window-based interface. The system has been designed so that a naive user can have it out of the box, set up, and doing real work in 20 minutes. The RAM upgrades (standard configuration of the Personal Iris includes 8 Mb of RAM and 8-bit color) are user-installable. If something goes wrong with the machine, all its electronics are contained in an easily-removable box; remove it, FedEX it to Silicon Graphics, and a loaner box is on its way. Finally, in contrast to most UNIX machines, which arrive with an array of manuals rivaling the Library of Congress, the Personal Iris comes with a small book containing everything a user needs to know to operate and administer the system. (A full set of documentation is available for programmers.)

Currently a quarter-billion-dollar company, Silicon Graphics is aggressively campaigning to open new markets by reducing the cost of its technology. At the high and the low end of the product lines, the company seems obsessed with delivering ever-higher performance at an ever-lower price, and becoming a key player in the evolution of the computer industry. And if, as is the plan, small businesses and individual designers come to demand technology you used to have to work for NASA to enjoy, we'll be hearing a lot more from this other, quieter workstation company from Mountain View.

We've been watching the progress of the Personal Iris for some months now (it was unveiled in October, and Silicon Graphics recently shipped its thousandth unit). Recently we visited the company's Mountain View headquarters to discuss its products and strategy with President/CEO Ed McCracken and Chairman Jim Clark.

We asked McCracken about the Iris line, what its current applications were, and what uses he envisions for the future.

What have been your markets until now? Who's been using your machines for what?

Ed McCracken: One of the nice things about three-dimensional graphics is the pervasiveness of use across a broad number of industries and applications. The biggest applications for our machines have been the automotive and aerospace market for different types of mechanical design and mechanical engineering. That's representative of 50 percent of our business. It's not the markets that we penetrated first, but it's the market that is the biggest, and we think it will continue to grow with us and be 50 percent of our business when we reach 500 million and when we reach a billion dollars. There's a lot of ro-

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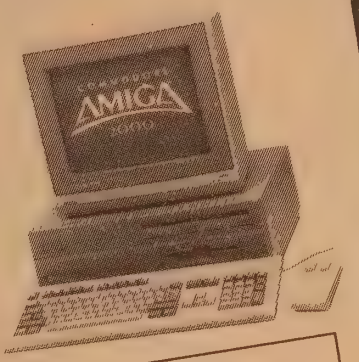

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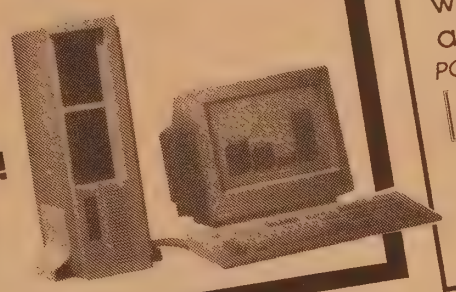

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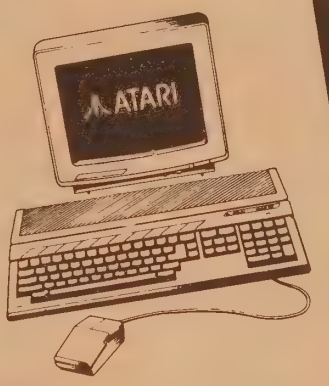

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bustness in that one marketplace.

The average mechanical engineer today either uses a terminal to an IBM mainframe, or they use a two-dimensional workstation. And they're dealing with three-dimensional structures, so it's awkward. Our systems can make a huge difference in the ease of use of the mechanical designer and how long it takes for them to get the job done. As a result, we think it makes a big difference in the competitiveness of corporations that commit to a three-dimensional approach.

That's the biggest. The first market for us was animation and creative graphics, and we feel that we have about 75 percent of the workstation portion of that market. It's about 10-12 percent of our business. Our current run rate is around $260-270 million total, so 10 percent of that would be maybe $30 million a year, which gives us most of the market. It's not a huge market; it will continue to grow some, but the nice thing about that market is that those people force you to have the best possible, most realistic image on the screen, and move it around in real time. That forces us to be on the cutting edge of new graphics architectures and new approaches to graphics. So then we take those capabilities and essentially do a technology transfer of those capabilities into the other markets, which are a lot slower to decide they need it, and that puts us way ahead in the other markets.

So that's another application. The third is gaming and simulation, where people use our product to simulate environments. The military was the first user here, where you use it to simulate a view out of a pilot's window, or those types of things, or to do mission planning, or to design a new cockpit of an airplane. But that's moved into simulations of manufacturing floors, and simulations of robots, and it'll eventually move into things like driver training and games, a lot of games that have a learning objective associated with them. That's about 25 percent of the business.

Then all the rest of our business, essentially, is in science. Visualization of chemistry-physics types of things. That's a very robust market for us, and it's an important market because it's leading edge.

We made a major transition in the company over the last year in that our products used to be ahead of everybody else in graphics, but the computing was, I guess you could say, marginal for most problems.

Because it was optimized for graphics?

It was optimized for graphics, and we just didn't pay a lot of attention to the computing, and then it became evident to us that the thing that was holding the graphics back in terms of performing was how fast we could feed the graphics data. So we started saying "Well, maybe we should increase the speed of our computing system." And so we kind of put our heads down and worked real hard to do that over the last two or three years—and then recently we kind of raised our head up and looked around and found out that the computer we had invented in the process was faster than anything else on the market in anything near the price range. It's that computing speed that's causing the physicists and the chemists and people like that to really beat a path to our door right now; they need the graphics, and the visualization is great, but the fact that it also is the fastest computer you can buy for anywhere near this price...

McCracken: "We're really out trying to convince people to write three-dimensional software, because it's a lot more fun to use, and it's fun to write, and it's going to be the volume market of the 1990s."

This is at the high end or the low end?

This is at the high end.

So those are the primary applications. There are a lot of new applications that are kind of innovative—they don't add up to a significant percentage of our business yet; they might in the mid 1990s. Applications like using our product at the point of sale, where maybe eventually you're going to buy a car and you'll sit at one of our systems. You'll say, "I'm interested in this model," and it pops up on the screen; you drive around a bit on the screen, and then you say, "These are my color options," so it colors it the way you wanted it, and "These are the other options I want," the texture of the seat covers, and so on. You choose your car exactly and it prints out your invoice.

Or you go in to buy some kitchen cabinets, so the whole catalog of kitchen cabinets is available to bring up on the screen. And then you define your area that you need to put the cabinets into, and it pulls them up, and when you get it all right, it looks the way you wanted it, then you print your invoice for kitchen cabinets. That's another one.

There's another new one in color printing, in terms of using our systems, which are great color systems, to help people electronically with each color print. And then the architectural market is going to get interested in our machines shortly, and I think there'll be markets that expand out of that into interior design, and landscape architecture and all kinds of unique, lower-cost kinds of markets.

I read that someone was using it for fashion and textile design.

Levi Strauss in San Francisco. They're really saving a lot of money doing it, because they can take a picture of a model wearing a sport coat, and then they can say, "Well, I wonder what that would look like in a plaid." They can take a plaid material and put it over her, and they've figured it out so the plaid material will fit into the creases, in the armpits and so on, and look real. It's a pretty wonderful thing. And then if they decide they like it, they can go straight to the catalog before they start production, so they don't have to do a sample.

One of the things I keep hearing is that 3D is useful because it saves a whole lot of expense on prototyping.

Yes. Absolutely. I was just talking to some of our people about a major Japanese company which has a large number of our systems that they use for power plant design. They have about 100 of our systems, I think, and before this they had to make these complex models of a power plant that took up an area almost the size of a basketball court—plastic models that were that big. They've been able to eliminate that whole process and go directly from the models on the screen to the construction site. They can give sales presentations to the customers and so on, all on screen, and never build the models. And be able to do all the checking to make sure the pipes aren't crossed, and that you have all the room you need to do the pipefitting and so on, and that you don't wait till too late in the project to take in this pipe that has these curves in it because you can't get it through the other pipes to get it to the right place.

It's really neat stuff. And they're being much more competitive in their markets as a result, to the point that they're almost putting some of their competitors out of business.

Why don't their competitors get with the program?

It takes time. There is a learning curve involved.

It turns out that in using our product—using three-dimensional databases and three-dimensional software running on three-dimensional hardware because all three are important—the first phase is, you get on the learning curve. First you buy the systems and you experiment with them a little bit.

And then you move into phase two. In phase two, where most of our customers are, if the product design process is that you do some conceptual design, and then you do some simulation and some analysis and some plant floor programming, you use our systems in any one or all of those processes, and it makes each of those processes more efficient.

Phase three, which this Japanese company is into now, is when you say "Aha! I've got the database captured electronically, I can pass it back. I don't have to do serial design. I don't have to finish this design before these people get started. I don't have to pass it down the serial process; I can build a team made up of all of these departments, and I can put them all together and they can pass data back and forth electronically, and can turn the whole design process into a parallel process rather than a serial process. And maybe I can cut my design time by a factor of four. And as a result of that I can be more competitive in world markets."

That's where you finally get to in the learning curve, but if your competitor's doing it all manually and on two-dimensional workstations, and you're doing it in phase three, then they've got to go through phases one and two in order to get to three, and so you're way ahead of the game.

So there is a very important time issue in competing with companies using three-dimensional computers. The sooner you get involved the better off you are in our competitive world.

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This may be a little out there at this point, but it seems to me that one of the natural applications of this technology is hypermedia. The Iris looks like the closest thing to a Xanadu machine I've seen yet.

It is. The hardware capability is going to be there, there's no question about that. It's going to take some software work. Each application has a slightly different hardware/software cycle. The advantages of three-dimensional activities in mechanical design were so important ten years ago that the major software vendors invented three-dimensional software and three-dimensional databases, which they've been running on two-dimensional machines for the last ten years. And now that they've got three-dimensional hardware, it's phenomenal.

In other markets, the three-dimensional hardware is there and the software is just starting to be developed now.

But the Personal Iris at its price point is going to allow a lot of very creative people to do creative software. Some of them are here at our company, but most of them are out there in the world. Hardware capabilities aren't going to be that difficult to put together.

What about virtual environments? They've got a helmet at NASA that puts you in a virtual room, where you can walk around and pick up objects. Do you see that type of application opening up as a result of these machines?

That's possible. The helmets at NASA are driven by our systems. They're hidden off to the side somewhere, because you can't put the system on your head, but the helmets use little pads that are in front of your eye and display the images on the pads. They were black-and-white the last time I was there; maybe they're color by now. Our systems drive those.

There are applications where I think our systems will be used with that kind of user interface rather than a screen. But who knows, in the 1990s, what will happen there? It's certainly one of the things we're watching; our systems are being used as experimental devices.

I have trouble myself believing that the average architect will come to work and put a helmet on their head and design their house. It's possible, who knows? There's no reason why it's not technically possible.

You do see that screen and want to jump in.

Right. You really create an artificial environment of these ideas, so the ideas you have about this city block you're designing become your reality while you're designing it. You can see how it would really unleash some nice creativity.

PHOTO: MICHAEL JAY

Clark: "The technology of integrated circuitry, and memory, and so forth, is now at the point where you can produce a 3D machine at a low price. And we're aggressively pursuing making them available at lower prices yet."

I can see game developers flipping over this machine if you can get the system price down.

Yes, and especially with fiber optic technologies as they're developing, you could have group games that could be really exciting, where you'd not only exist in the space, but multiple people exist in the space. Which would be kind of fun.

The Personal Iris is really our fourth-generation product. We've been working on three-dimensional graphics in computing for about that long, and it's so different from our first- and second-generation machines. Our first- and second-generation machines were primarily used in wire-frame mode. Everything was vectors, and we quoted vector rates and line-drawing rates and those types of things. And we've gone so far beyond that now, because we think realism is important.

There are a lot of other companies in the industry that I think will be introducing some "three-dimensional" products this year, and they will primarily quote vector rates. I think the market's going to be a little confused sometimes about what they can do versus what the Personal Iris can do. We're trying to simulate reality on these systems. We're trying to make the image real—you can't do that with stick figures, except in electrical engineering, where if you're dealing with schematics or something, you might be able to get by. But for the applications we're interested in, you need lighted, shaded surfaces that can operate in motion in real time.

Silicon Graphics executives are fond of saying "If it don't move, it ain't 3D." Could you elaborate on that?

Earlier I talked about a lot of the mechanical CAD companies having developed 3D software during the last ten years because they saw the need for a three-dimensional database and for the three-dimensional software to operate on the database. So they would sometimes call their applications 3D. And they *are* 3D, except when you went to use them on any workstations that existed, they could only draw one image every second or every two seconds. Or even every ten seconds. And as a result you couldn't move it on the screen.

If you can't move the image on your screen, you can't get a feeling for the third dimension. You may be able to take a three-dimensional database and bring it out on the screen, but once it's there it's just a two-dimensional flat picture. And in order to really understand the depth of the image you've got to repaint it at 20-30 times a second. When you see a movie, you see 24 frames a second, and 24 frames a second is about the right speed to view an image at.

That's why the graphics for three-dimensional computing is so much more complex than two-dimensional workstations—you have to repaint the screen 20-30 times a second. So there's a lot of controversy about what really is 3D, and we just make it easy: if it doesn't move on the screen, it isn't 3D.

What's the difference in the speed of image movement on the Personal Iris compared to the speed of your high-end systems?

It isn't so much the difference of speed, it's how complex the object can be and still move at 20-30 frames a second. I think there's probably around the order of five to ten times difference in the complexity of the object that you can show on the screen, moving in real time. So if you can show a house on the Personal Iris and move it, on the higher system you can probably show the house, and you can probably have windows on the house, and you might be able to see through the windows and have the windows be translucent. Maybe you could have a tree, and maybe you could have a few other things, and still be able to move around it. On the Personal Iris, maybe it's just a house. That's it. The windows aren't translucent.

Light sources are pretty much the same?

The same algorithms are used, it's just that we use so many more processors on our high-end systems that we can do things much faster. But one of the nice things about our product line is we use the same algorithms top to bottom, which means that the same graphics software can run on all of our systems.

Which is a great thing for the software companies, because they don't have to have different versions of our systems, like they do on most of our competitors' machines. They can use the same software across the entire line, and it's all binary compatible from both a computing and graphics standpoint.

It truly does change everybody's experience of ever using a computer in the history of computing. History of computing: 2000 BC till today.

In your mind, you create images and thoughts and feelings, most of which have depth, and historically you've had to squeeze it and change it and linear-ize it—generally move it from your right brain to your left brain, get it out into symbols the computer understands, and then the

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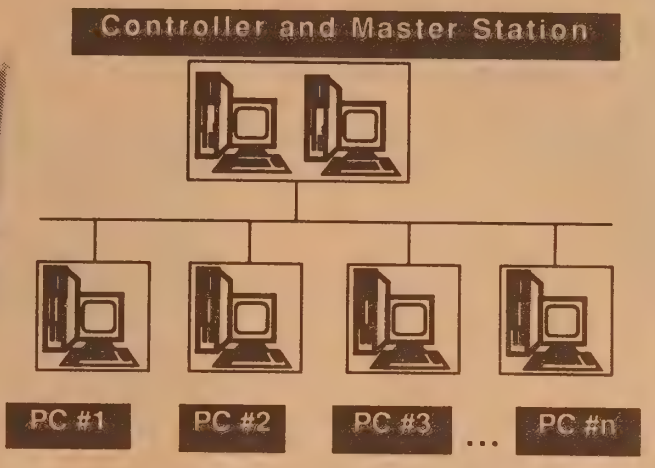

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computer chunks away on it and gives it back, in symbols the computer understands, and then you take it from your left brain and try to feed it back to your right brain. And of course by now your right brain's asleep.

As you know, creativity has momentum, and when you can keep your right brain of your mind enraptured by something and going on it...

Once you find that groove you want to stay with it.

You get the groove, you get the high, and you kind of go for it, and you make these tremendous leaps. It's our belief that you'll be able to do that with this class of system.

Of the customers who are considering a PC or Mac II workstation, or maybe a low-end Sun/4, who should look at the Personal Iris too?

We're repositioning our company. Nine months ago we wouldn't have been on the map. We wouldn't have been considered at all. Today we are being considered in a lot of applications, and I think we will be considered even more in the future. A lot of it just depends on whether you've heard of Silicon Graphics or not, and that doesn't vary all that much by application—it's just that we're so new in this marketplace.

Our prices are not all that different. The price of our system and the price of a Sun/4 is about the same. And if you load up a Mac, as a lot of people do at the high-end applications, then it gets to be about the same.

So the person that will tend to use our system, first of all, is anybody who's got one of three requirements. One is that they know they have significant computing needs, that their application burns computer cycles. If so, there's nothing faster anywhere near the price range than our system. There's nothing faster at two or three times the price than our system, just in terms of cranking away at the computing behind the applicaton.

There isn't a better full-color system on the market, so if you really want 24 bits of color and you want that handled really nicely, our system is great at that.

And the third reason is if, in what you're doing, you want to deal with anything that has a third dimension, anything that has depth. Our system handles the shallow stuff fine, and a lot of the full-color thing is just two-dimensional stuff, and if you need full color our system is great. But if you want to do anything with depth our system is the obvious choice.

And of course it has a lot more screen resolution than a Mac, also. Even the Macs with all the add-on boards get up to maybe 1024 by 7-something, and ours are 1280 by 1024.

In order to do all this graphics handling and fast computing, you need a lot of RAM.

Yes, we do. Video RAM, mostly.

That's been something of a problem lately—has this affected you significantly?

Well, yes, it has. When we set out to design the Personal Iris two years ago, we expected it to come in closer to $10,000 than $15,000. We thought by now we'd have been able to price it down in the $10-$11,000 price range. We had to introduce it at $15,000. The big difference is RAM price.

We use two different types of RAM in the system, dynamic RAM, which is like everybody else's, for the main computer; and then we use video RAM, which stores the information right before it goes onto the screen. So it has the information about color, and what's in front and what's behind, and those types of things. Those have been in short supply. We've been able to get enough to meet our needs, but the prices are certainly a lot higher than we expected them to be two years ago.

The Personal Iris seems a lot more accessible to relatively naive users than most workstations.

We've gotten tremendous feedback. We shipped 1,000 systems last quarter in a 90-day period of time, and we've gotten tremendous feedback from our customers that they were able to take the systems out of the box, put them together, get them running, in less time than they could a PC or a Mac, and a *lot* less time than a Sun product. The system is much more approachable, and that was our objective. We spent an awful lot of time with that. We had a lot of videotaped focus group work, where we brought people in and had them do all those things and be videotaped, and we made signficant changes to the product, in the packaging, and software, and the boxes they came in, and the manuals, because of that videotape work we did. It was really effective.

You have user-installable RAM upgrades.

That's right, we do. And we're getting very positive feedback on that.

Nobody's frying their motherboards?

Nobody's frying their motherboards. It's even better than we thought. It's a little surprising to us, because we were doing it as kind of an experiment. This is working quite well—we did some focus group work on that too, and as a result we changed the sockets a little bit.

Where do you plan to go from here with the Personal end of the product line?

Well, we're not pleased with our current prices. We think the performance is nice, but we're not pleased with the performance either. So the $15,000 barrier that we're currently at is going to break, and we'll get the prices down to 12 or 10 or nine or eight [thousand]; we'll take it down as far as we can. We don't think there's anything inherently more expensive about a RISC machine than an Intel- or a Motorola-based machine.

We think that in the 1990s there's no reason that you should pay any more for our low-end machines than anybody's PC—powerful PCs, of course—and the performance should be really dramatic.

The other thing is, even our systems don't have the kind of realism that customers really want. If an architect is designing a house, they want the house to look real. It looks *pretty* real on our system, but there's no trees in the yard in front of it, and the walkway and the street and the texture on the side and so forth—if you put all those things in, and you make the house really complicated, you can't really rotate it in real time, like you'd really like. There's an awful lot of things from a graphics standpoint that we plan to make better, both in terms of more performance and more features.

And then the third thing is just software. We plan to put a lot more emphasis on software. We have an internal objective to go from 400 packages, which we have today, to 4,000 packages in three years. So that's taking a lot of our energy and a lot of our time.

Maybe the last thing is we're readying distribution channels. We're in the process right now of signing up dealer/resellers—I think what you'd call VARs. They are geographical in nature, they're not nationwide, and some of them have storefronts, some of them don't. We're following our software partners into them. So we're working with CADKEY and Sigma Designs—CADKEY is in mechanical design, Sigma is architecture—and we're going out to their resellers. Our objective is to have 50 of them signed up by June, which is a good start, we think. It's a test program between now and June, and then we'll expand it after that.

So that's a new thing for us as well, and of course that would become more and more important to us as our prices come down.

Are there any particular types of software applications you're interested in attracting?

Well, yes, obviously, there are. Anything in mechanical design, anything in architecture, are very important to us, but beyond that we specialize in chemistry, we specialize in anything in the publishing area, anything, certainly, in the gaming and simulation environment would be good.

But more generally, we believe that the really significant software that will run on our system, and other people's three-dimensional systems in 1995, hasn't yet been written. So we're really out trying to convince people to write three-dimensional software, because it's a lot more fun to use, and it's fun to write, and it's going to be the volume market of the 1990s.

What are the demands that 3D imposes?

I think the opportunity that it creates is that you can assume you can move whatever you have on the screen. It changes the nature of the way you write the software, because you assume motion. So you're creating a movie at the time and so you write it a little bit differently.

Beyond that, it's not that different from writing any other kind of software. You have to pay attention to the object itself, the environment in which the object exists, how the object is lighted, what kind of textures it has. Those types of things. Which a lot of programmers aren't used to yet—on our system we have something we call our three-dimensional tutorial, where you can try out how to program to change the texture of an object, and how to program to change the lighting of it, and whether it's a pinpoint light source or a more diffuse light source. We build a lot of those types of things into our systems.

For somebody who's essentially a computer illiterate, how long would it take them to be doing useful work on these machines?

It depends. If you're a computer illiterate, it means you're not going to use the system unless an applications package exists that you need to use. So it depends on the applications package.

If you're a chemist and you're a computer illiterate, and you're at Genentech and you're going to be designing molecules of certain types, then you'll buy software from one of about four sources, all of which run on our machines, and maybe in about a month you'll get pretty comfortable with it.

Or if you're an architect and you bought the Sigma Designs software, you'll probably be comfortable in a few hours. It varies by market. If you're a film animator, it may take a little longer, because the software's

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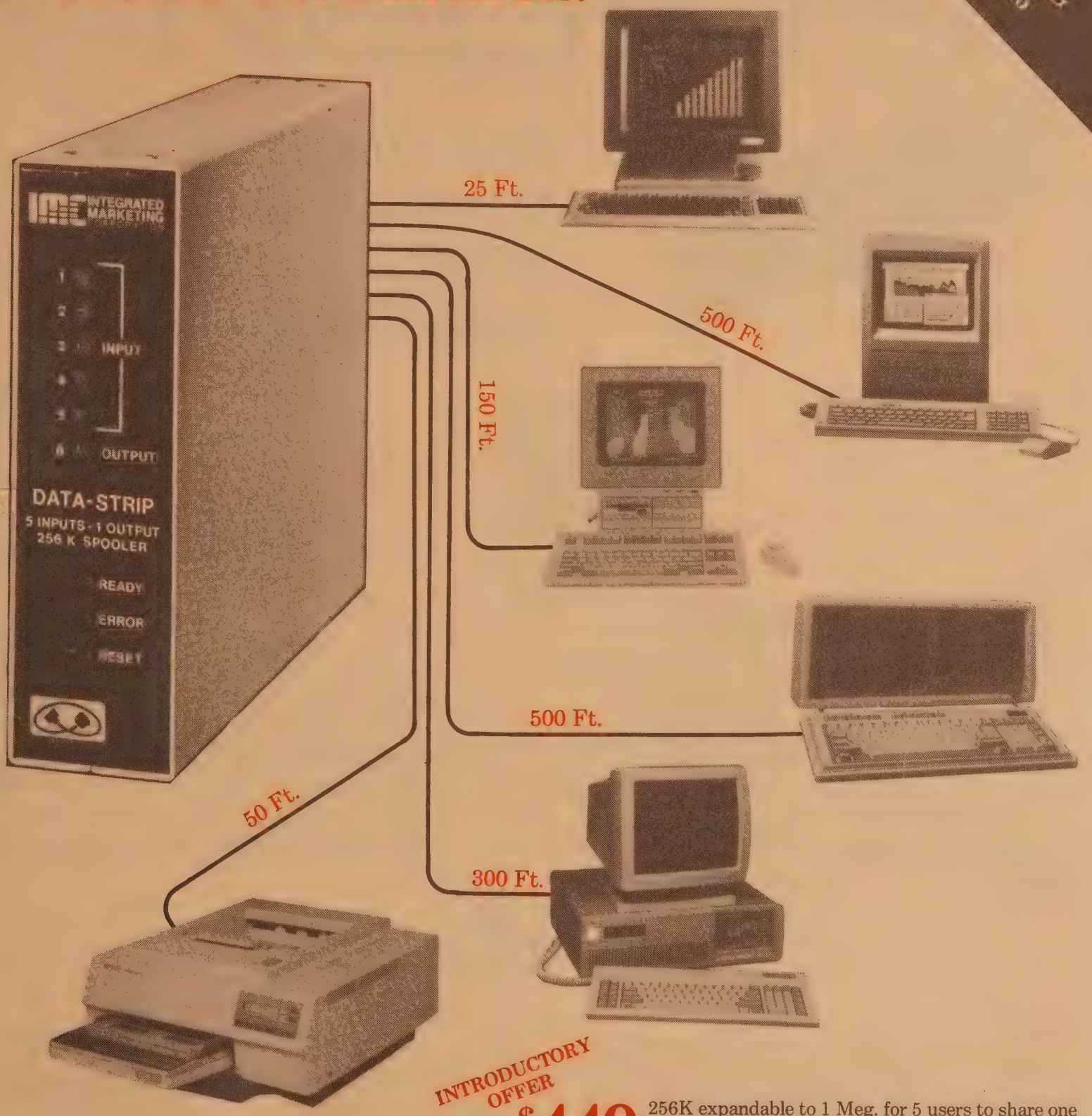

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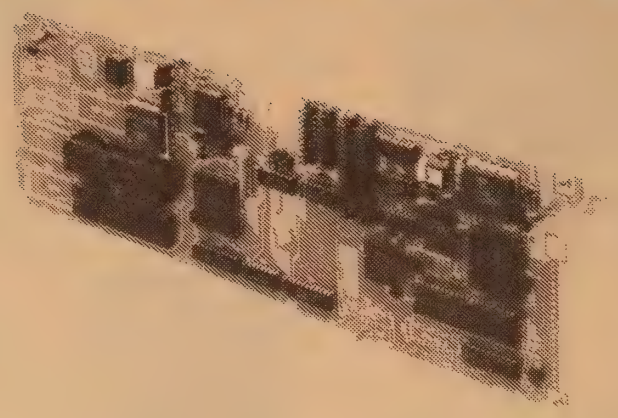

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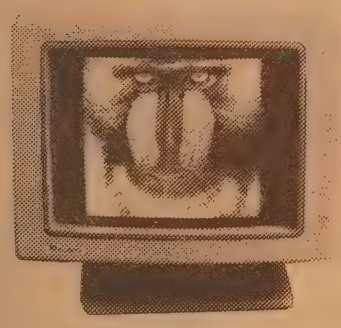

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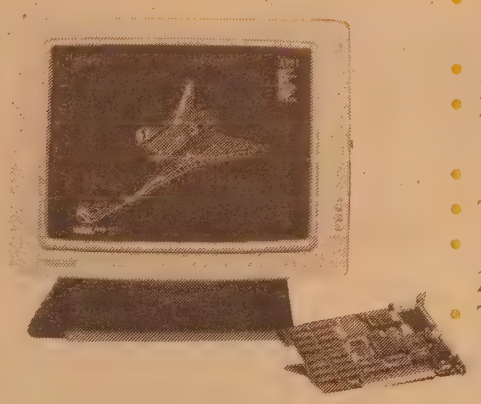

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Setup	(50)	Good	Good	Good	Good	Good	Good	Good	Good
Ease of use	(50)	Very Good	Good	Good	Very Good	Good	Very Good	Satisfactory	Very Good
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Workmanship	(75)	Satisfactory	Excellent	Satisfactory	Very Good	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Support policies	(50)	Satisfactory	Satisfactory	Poor	Good	Satisfactory	Good	Good	Satisfactory
Technical support	(75)	Satisfactory	Good	Very Good	Poor	Satisfactory	Very Good	Unacceptable	Good
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pretty complicated, and that kind of software tends to assume that you're a genius, because the film animators tend to be kind of creative geniuses. It varies—each software package has a little different learning curve.

We're shipping something we call Quick Model and Quick Paint with our system, which gives the computer illiterate a chance to bring the system up and build a three-dimensional model and animate it without any knowledge of a computer at all. He should be able to do that in the first hour—which gives you a chance to feel successful, which is really nice. You don't have to do any programming to do that, you just have to choose options on a set of menus and icons.

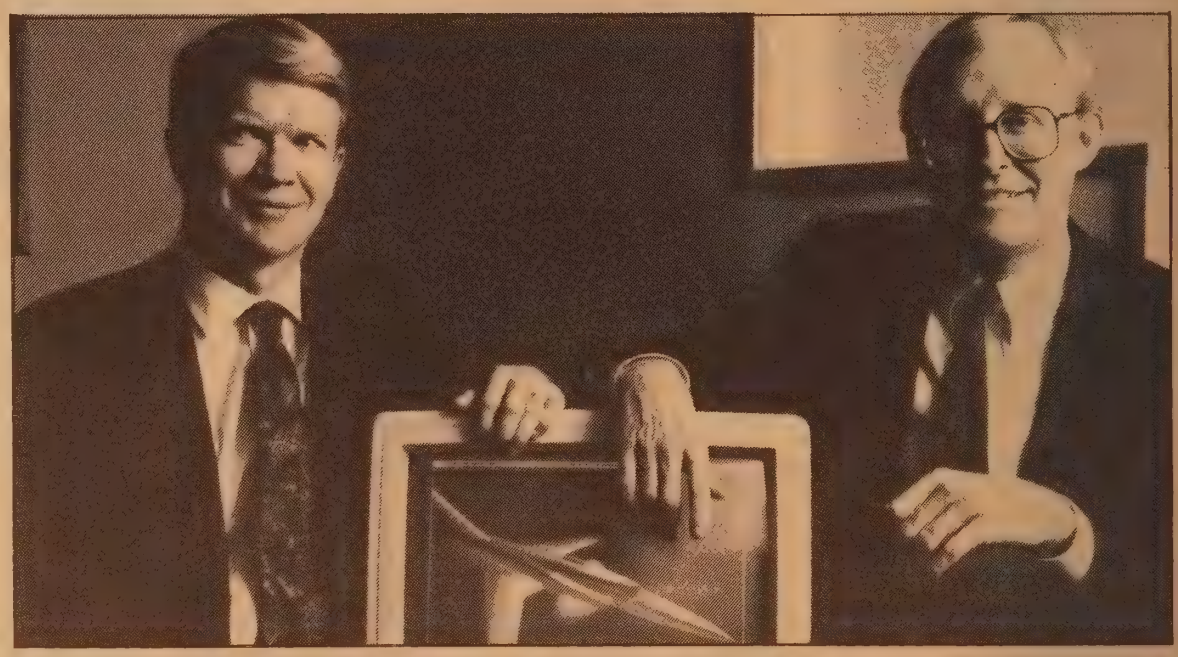
And then we have WorkSpace, the icon-based user interface on the Personal Iris. It makes UNIX a lot easier to work with. Initially it's on the Personal Iris, and eventually the whole product line.

We have a lot of very nice icon-based UNIX administrative tools on it. When OSF or the standards organizations agree on exactly what the user interface that goes on top of UNIX will be, then we'll overlay that on top of what we have. But this will exist until that time, or maybe even beyond that time, as our primary user interface. ■

The Big Picture

Silicon Graphics Chairman Jim Clark On The Workstation Marketplace, Standards, And 3D

PHOTO: MICHAEL JAY



Clark: "You can buy a $15,000 motorcycle or a $15,000 pickup truck—they're not the same product, they're not the same market. We have a $15,000 3D machne, and it's going to have some overlapping capabilities with a 2D machine. But they're really very different products."

What needs was Silicon Graphics intended to address?

Fundamentally we were driven by the lack of real usable graphics systems of the type that I had always been exposed to—real-time three-dimensional systems, basically, doing things and being able to connect with real-world physical problems in a very interactive way. So graphics has always been the drive of this company, in particular 3D graphics, but I would say that over time that'll probably broaden quite a lot.

I like to think of the company as sort of the graphics computer company—*not* the computer graphics company. We sometimes focus a lot on 3D because it turns out a very significant part of the world is three-dimensional, and it's the part that really hasn't gotten developed.

Designing three-dimensional things has always been a pencil-and-paper type of discipline. The currency of trade of a lot of three-dimensional engineering has been the drawing. But over time, with more and more computers at your disposal, the drawing on the piece of paper will become less important and the media of exchange will be the computer. When you're dealing with a three-dimensional object, you want to be able to exchange the three-dimensional object, which you obviously can't do, but you want to be able to convey to a manufacturer on a floor, for example, "Here's what the part has to look like." And to the engineer who's doing the engineering, you have to be able to convey "Here's what the stresses mapped onto this object look like if this object is put under certain kinds of loads." So it's a kind of soup-to-nuts desire, is what the objective of the company is now, and it focuses largely in the CAD/CAM/CAE area, but it's going to evolve into a lot of other areas, such as chemistry and architecture and all of these disciplines that are three-dimensional.

The roots of the company really are driven a lot by graphics, but you can't have graphics in isolation. The whole workstation industry came out of the merging of computer graphics and computing into one box. To some degree the same is also true of the personal computer industry. It is the principal interface to a computer, your visual system, so having a very high quality graphics system is really important. We've been the leader in that area in the three-dimensional area, and we intend to remain that way.

Who are your competitors in 3D?

Competitors tend to come in categories related to a particular application, or a particular installed base that they've already developed because they were here before with computer systems, or they had a two-dimensional product that they've gotten into accounts with and they've grown rapidly. So you can look at it on the one hand and say there *are* no competitors, but then realistically every computer company is a competitor, and every workstation company is a competitor.

On a one-on-one basis, if the requirements are three-dimensional we tend to have no competition. I suppose in that dimension the company that has surfaced most has been Hewlett-Packard. Hewlett-Packard doesn't seem to have a competitive product line relative to us. They just basically don't. At a given price point, we've got a much better product in the 3D area.

Who needs 3D?

Who doesn't?

The world's going to be a very different place in another 10, 15 years—the way computing is done, the way engineering is done. And all engineering that entails designing or understanding some kind of three-dimensional phenomenon will evolve to the point where it has to have and will use a computer, to both visualize and do the actual design in a more upfront three-dimensional manner.

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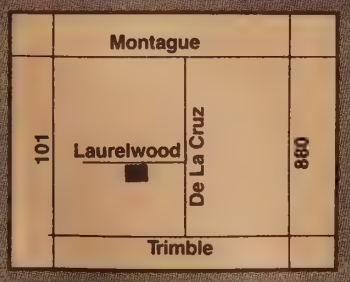

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Today, the starting point for design, for the most part, is a drawing. Even when you go to a 2D workstation, it's still the starting point.

There are lots of disciplines and lots of areas of applications that aren't three-dimensional—desktop publishing is not three-dimensional. Spreadsheets. I have a personal aversion to trying to find a way to present data that's not intrinsically three-dimensional in a three-dimensional form—for example, a three-dimensional view of financial data, or three-dimensional bar charts.

I don't think that serves a purpose, and it certainly isn't what drives us when we think about this. It's more—what is the discipline innately dealing with? In architecture it's obvious, right—it's a building. In designing industrial products—chairs, coffee pots, packaging for any kind of product—it's a three-dimensional thing. Automobile design, styling, down to the levels of mechanical engineering—that's all three-dimensional. Aerospace industries—it's all three-dimensional. Chemistry—we've been making stick figures in chemistry. Remember when you took your college chemistry class and there was always this little stick figure? It's a geometric process.

Medicine—a lot of medicine, a lot of reconstructive surgery modeling being used, and understanding three-dimensional images, CAT scans and NMR images. Those are really three-dimensional images, as opposed to geometry. You infer the geometry from the image—X-ray is a two-dimensional image from which one infers things about the bones and internal structures of the body, and likewise NMR or CAT scan type of technology is a two-dimensional imaging technology. Nonetheless, people derive from those images 3D shapes which are then represented as geometry. For example, some of the reconstructive surgery and hip joint manufacturing—finding the precise angle for the hip joint in order for it to fit a particular person, sort of customized hip joints as opposed to standard-part hip joints. I know there's some people back at Cornell using it for that.

You design the part onscreen and then it's manufactured to the computer's specs?

Yes. The point is there's an X-ray, or maybe even an NMR scan, of this person's hip, and the idea is to get the precise dimensions of the ball, and the precise angle that the ball needs to go away from the socket, or that the piece that connects to the leg has to go away from the socket in order to be a proper fit for that particular individual. All of us are slightly different in our geometry, so it's really important for that.

So my answer to the question is that there are certainly some disciplines that aren't 3D, but by and large engineering, as I see it, and science are three-dimensional.

How does a software package like AutoCAD in the micro world fit into what you're talking about?

It's a drafting package. There's a little company called ParaComp that has a couple of products I would consider real 3D products. One is *Swivel 3D* and another is *Model Shop*. *Swivel 3D* is a little animation/conceptual design modeling package for creating simple geometric models for animation purposes. *Model Shop* is an AEC (Architecture/Engineering/Construction) package that's a conceptual design package. It allows a conceptual three-dimensional model to be constructed right there on the scene of your new architecture. The thing that you have when you're finished is this three-dimensional model that you can get renderings of, see from different points of view, take walkthroughs of—it's for the up-front conceptualizing phase.

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After that phase you need to go into the drawing phase. So it's really something that would work as an adjunct to *AutoCAD*. You do need drawings in the architecture business. That'll change. Specific drawings as we use them today will change significantly over the next years, but for today it's still the currency, as I said before. Exchange between a contractor and an architect or whomever.

So *AutoCAD* is focused on today's need to have drawings. It's been pretty successful there. But they aren't a 3D product. They've tried to add some 3D capabilities, but after the fact is a little more difficult.

What are the capabilities of your various machines?

Personal Iris is the highest performing workstation available with 3D graphics in the under-$20,000 price range. It's 10 times the old VAX 11/780 in basic compute power, and it's got computer graphics power that's about 30 times faster than what we first introduced four years ago. So it's a pretty powerful little machine, the one that a lot of people are most excited about.

Well, not that many people are in a position to go out and drop $80,000 on a high-end system.

Exactly. Well, that was the reason for doing it. We would have had a low-end machine a long time ago, but we chose not to, because we wanted to make sure that we continued to make 3D machines. The technology of integrated circuitry, and memory, and so forth, is now at the point where you can produce a 3D machine at a low enough price. And we're aggressively pursuing making them available at lower prices yet.

That's a real important thing for us, to continue to make 3D machines, and compatible. Right now Silicon Graphics is the only company that offers a totally compatible product line. Every other computer company, every other workstation company, has two or three different CPUs in their product family, including Sun—at least three, the 386, the 68000, and SPARC. Whereas ours is Mips CPU top to bottom, and we're the only company that has object code compatibility.

So there's a lot of similarities, but object code compatibility means you can take a binary file written on one machine and run it on another machine. So a file or a source program that's developed for the Personal Iris can be compiled and put in a runnable format, and you can take that format and immediately run it on the high-end machine without changing it.

So you can preserve your software investment.

Exactly. Software developers develop code for one machine and they can run it on all of them. It's a story that DEC used to have, in the compute side only, not the graphics. DEC used to have this story for computing on the VAX/VMS line. And right now we're the only company that has that. It's turning into a pretty powerful marketing tool for us, to convince people to develop more software, and to encourage people to buy from us in a given competitive situation with another company, which might have a product that's moderately competitive at that particular point, but they don't have the rest of the product family.

A good example there I think is probably some of the high end competitors, and there's a bevy of them, that are fairly noisy and strident but haven't been very successful selling against us, not only because we seem to have a faster product at the high end than they do—I think that's probably a surprise to them—but also because we have the product family and they don't. So it's a powerful set of processors; it spans the range from $20,000 up to about $150,000.

You develop your own system software, but not application software, is that correct?

Right, that's correct.

So how do you work with application developers?

Very carefully. (laughs) We're partners. Our livelihood depends on their getting software on our platform. So we work with them through a program called the Geometry Partners Program, which has a variety of different points, one of which is putting aside money to help them do co-advertising with us, as credits, in a sense. Providing them machines at discounted prices so they can get software up. A variety of things like that.

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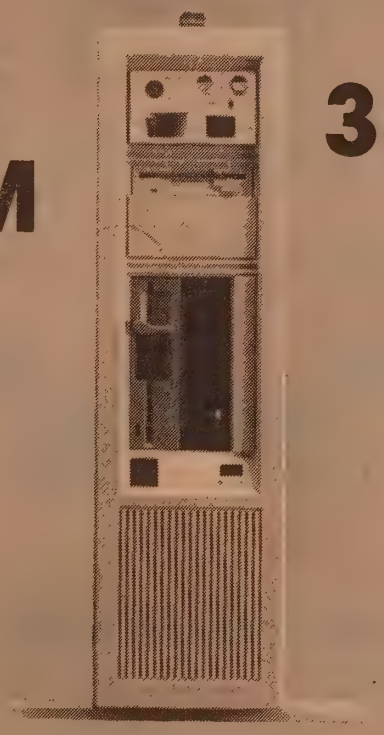

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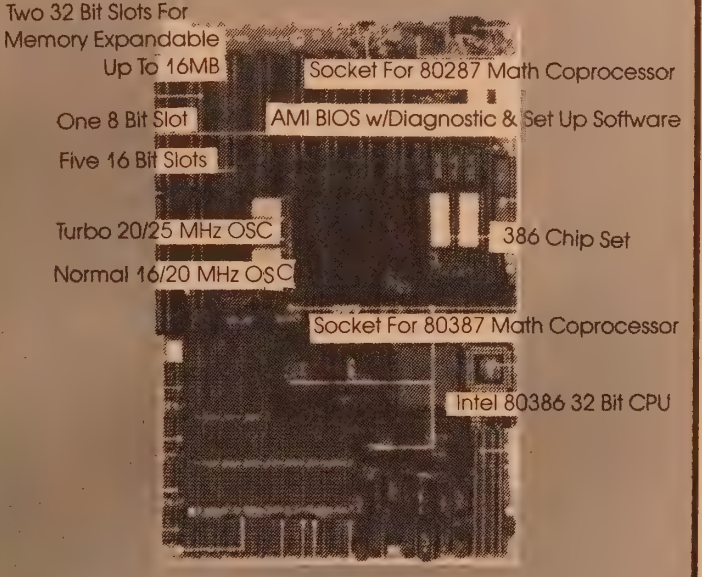
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All your machines are RISC machines at this point?

Yes. We're also probably the only company with that distinction. One hundred per cent of our sales are on RISC machines.

Probably the most well-known RISC architecture is SPARC from Sun. What led you to go with the Mips processor rather than SPARC?

The Mips design is better. That's the reason we went with it.

Better in terms of what?

Faster. For a given clock rate, you get more work done. So if you fabricate both chips on the same technology, and they can both run with the same clock rate, one does more work. The Mips chip does more work, that's a fundamental difference. Running UNIX, running standard applications, it delivers more work per unit time than does the SPARC chip using the exact same clock rate, by somewhere in the range of 20-30 percent. Significant enough that, for example, at the same clock rate we get 10 MIPS and the SPARC architecture tends to get around seven or eight MIPS. So it's not insignificant.

Aside from that—that's just sort of the bottom line—the other thing is that Sun has throughout its history been fairly—Sun is sort of after all markets. It sort of thinks that it can take over all of technical computing. And at the time it was being offered and we were making the decision, we could get the Mips chip and we couldn't get the SPARC chip. Mips was available beforehand. Even if they had been available at the same time, there was the clock rate performance difference, but even if it hadn't been for those two things, we probably would've looked for an alternative just because it was coming from Sun.

On three or four different occasions in the last four years they've said, "This is the board that we're going to stick into Suns and sort of negate the need for Silicon Graphics to exist." They've been pretty aggressive about trying to come into the 3D market, but they just haven't been able to do it.

Connectivity and multivendor environments are a big issue these days. How important is connectivity in the environments you're operating in?

It's essential. But every company that's trying to be a major player in big corporate America and corporations throughout the world has to supply all that. It's a given. What you've got to do is add the real-time 3D and the software to make a difference so that you can fit in those environments. You *have* to be able to. We're a licensee of a lot of these different technologies—for networking NFS, for example. We use a lot of that kind of technology.

Connectivity is crucial. At McDonnell-Douglas, connectivity to IBM is important. At Boeing, connectivity to the Cray environment is important. At NASA, connectivity to the Cray is important. Connectivity to the DEC world has always been an important thing, because they were such a dominant technology computer company. But you've just got to do a little bit more.

We spend our energy working to make our graphics better, let's say, and graphics architectures faster, whereas Sun might spend more energy developing a CPU, the SPARC architecture, because they felt that was necessary for some reason. We try to license compilers and get the kind of stuff that a lot of other people invested a lot of energy to make, rather than developing them ourselves.

Concentrate on what you do best already.

Exactly. Where our unique value is, concentrate there to continue to be uniquely adding value in a way no one else can.

Do you foresee that 3D is going to be something that people come to demand in general computing as well as technical?

Oh yeah. No question about it. It'll be on all machines—but who will have the best? That's the question. And it's our intent to be the company that comes rolling off your tongue when you ask that question.

Think about the computer industry in the last 20 years. The companies that sort of rose out of the ashes there on the basis of compute technology—DEC, Data General, Prime, CDC, IBM, Unisys, Burroughs, and companies throughout time. They dominated on the basis of some unique architectural or technical edge—like DEC, for example, just built a better machine than some of their competitors. Data General just kind of lost it, lost whatever their formula was for doing good machines. And then others benefited or grew, not so much on the basis of technology, but just by going after market niches, big commercial market niches that IBM wasn't successfully addressing, or was ignoring.

We're in a technical business. We want to remain competitive on the computing side of things, but absolute leaders on the graphics side of things. For the last while we've had the fastest workstation, the fastest computer system on the market for less than $20,000. A lot of people don't associate the best

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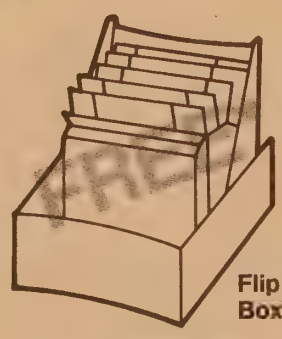
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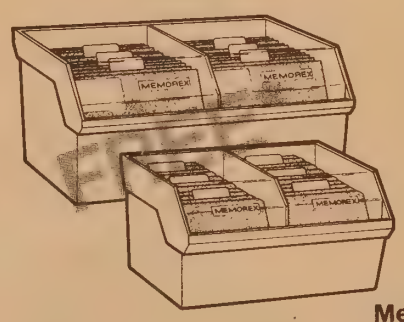
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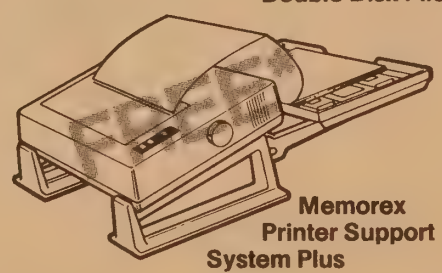
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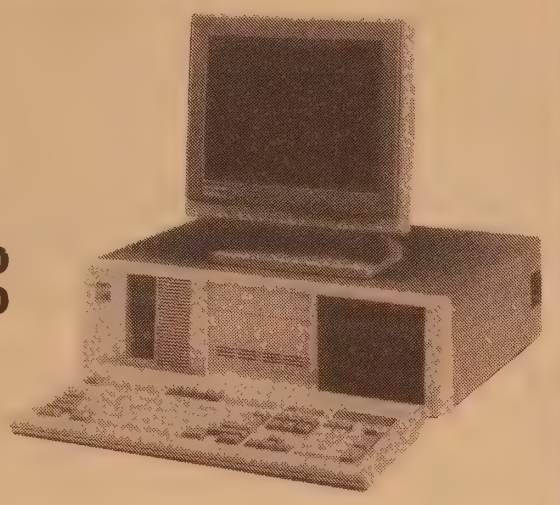

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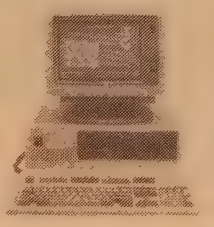

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Are you going to go to V.4 when it comes out?

We'll go to the best one. V.4 is the most likely, I would say. AT&T, as far as I'm concerned, is still the source for UNIX. I tend to agree with what Scott [McNealy] said in his interview ["The World According To Sun," *MicroTimes* issue #51, in which McNealy describes AT&T UNIX as "Coke Classic"]—OSF is...

Who needs it?

Well, you know, I can understand. The bottom line, the reason that whole thing got polarized like it did, is because it appeared to the rest of the world that Sun was trying to pull a fast one with AT&T.

If, in fact, UNIX development fell under Sun's control, which is the way it seemed at the time that the announcement of the alliance with AT&T and Mr. Cassoni's joining Sun's board of directors and so forth—it seemed that Sun was essentially going to get the control of UNIX, and that *should* worry the rest of the world. Contrary to whatever they say—they've got great marketing statements, Sun, but in fact they're out to take over the entire computing world. And if they see UNIX as a vehicle for doing that, they're going to do it. So there's nothing benevolent about their behavior.

So that caused this other reaction. They're the ones that caused OSF to come into being, is what I'm getting at. And if in fact Sun and AT&T did stay in this tight alliance, I think you would find real merit in what OSF is doing. They would *have* to find merit, because it couldn't be at the disposal of Sun.

As long as AT&T is kind of this harmless vendor of UNIX, harmless to all computer companies, so long as they can retain that somewhat unbiased posture, it will continue to be a standard based on their UNIX. And there will be no reason for OSF to exist. That's what's ironic about all that—Sun complains about it, they poke holes at it and shoot at it and so forth, but it will absolutely be successful if they end up going off and causing a polarization.

So they're really in control of it—all they have to do is relax it. Well, AT&T is more in control than Sun is. I think their whole thing was considered—from my perspective, at least, it was considered a mistake once Cassoni left and went back to Olivetti. It's my perception that everyone was kind of looking for a way to gracefully get out of the deal with Sun in some fashion.

If I were in AT&T's shoes, I sure wouldn't want to put all my eggs in Sun's basket. Sun is a very successful and good company, but there are lots of other companies who are going to use UNIX. Unless they have another agenda. They may have another agenda, like acquiring Sun, or having Sun be their principal marketing arm for computing.

How much of Sun's talk about building open, cloneable machines do you honestly believe is real, and how much do you think is a marketing position? If there truly were a machine out there offered by the Japanese that had access to every single piece of what's available from Sun—all of the window management tools, the networking tools, the program development tools—and were truly cloneable, they would shake in their boots. It's total garbage, what they put out in that sense, I think. I think it's good marketing, but it's not true when it comes to McNealy's statements about cloneability. It isn't.

You cannot take an application developed for a Sun and easily port it to anything else. I don't care if it uses the same UNIX and NeWS and the whole bit, because there are other ways it gets subtly wound around Sun hardware. So they have a captive audience. They absolutely have people right by the nape of the neck. It's not as bad as someone being wired into VMS on a DEC machine where they've written some assembly code, but it's still an insidious kind of commitment that almost catches people unawares. So it's not true, it's not real, this notion of cloneability and they're totally open and all of this—they're smart enough to realize that people are wired into them, and they put out this image, and it's been extremely successful. But it isn't true.

Well, from the user standpoint the cloneability of the PC was a great thing, but it sure horrified IBM

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once they realized what they'd done.

And in fact they have given up on that now, haven't they? And they're getting criticized for going to something that's somewhat more closed, but basically if Sun really believes in cloneability, then make their stuff available at low cost. License it to Sony, for example, or NEC—that would scare them, and for good reason. So I think that Sun's got a great marketing campaign going, but in reality anybody who's ever written a piece of code for a machine realizes that—you go to any software developer, and if they have to change one line of code in order to make it run on a different machine, it's a massive decision. Because for one thing, there may be a million lines of code and they don't know where that one line of code *is*, you know? And they've got to go in and find it and change it, maybe. It's a big decision.

Clark: "They've got great marketing statements, Sun, but in fact they're out to take over the entire computing world. And if they see UNIX as a vehicle for doing that, they're going to do it."

But isn't the open architecture to some extent an outgrowth of the portability of UNIX?

No. UNIX was set out with the true objective of being a portable operating system. But not for any marketing reasons, just for technical reasons, because the people at Bell Labs who developed it wanted to be able to run it on different machines. It was intended to be portable. Mainly it ran on DEC machines.

See, the fallacy is that Sun's marketing of the openness is believed by people, and Sun maybe even believes it themselves. But marketing is a large part of the game, and they've been a very successful marketer.

Our company is—there's some differences. They appealed a lot to computer science types. We appeal a lot to non-computer science types—the artists. We appeal a lot to the artists. A lot to the physicists, the chemists, the medical doctors. They see our stuff and say, "*That's* something I can relate to! Gee, is there some way I can do this?" And the animation people, and mechanical engineers. The analyst—the person who's trying to understand why a part might fail under a certain scenario—he's trying to see the part. Finite element analysis. Fluid dynamics. Studying an airplane flowing through the air. These are all three-dimensional phenomena that people are trying to understand and deal with. Those are the kinds of people we appeal to, much more so than to the computer science, the program developer for its own sake.

Would that be at all analogous to what the Mac did in the personal computer world?

Yes. I think we're very similar. I think there's a very analogous line to draw between ourselves and Apple. We're very similar in that we offer these visual programming environments. It's a graphic computer. And we will expand into other more conventional 2D and image processing areas, because we want to be a completely integrated graphic computing environment above the low-end distribution channels. Above the sort of $10,000 price range.

The DOS computing world doesn't know how to take Sun at all. It's pretty funny to see an audience of Suits thrown into complete confusion by a typical Sun "here it is, here's why we're doing it, take it or leave it, bye" presentation.

Well, on a technical basis the Sun machine is better than a PC by any measure. Their low end machine is a better machine than a PC or a Mac, on a technical basis. But on a technical basis, a Silicon Graphics is better than a Sun machine. It is. It's got better graphics, a faster CPU.

But there's a very different set of marketing things, and Sun of all people ought to know the value of being there first at the low end. See, Apple and IBM and Compaq own those low-end distribution channels, and Sun is having a real hard time breaking into them. Even if they do, I think the low end is a very, very simple community compared to the community that Sun has been selling to, simple in the way they think about computing. UNIX is overwhelming to them. I'm talking about the people that work at Businessland and sell computers—go in and talk to those people and see if you think they're ever going to be able to understand UNIX. No way.

I've talked to salespeople who have trouble understanding MacWrite.

(Laughs) That's right.

I mean, they're ready to take your check and pull out the order and check off the features that you want, and some of them have some reasonable ability to articulate what's in it—they never even use the program.

It's a very different problem that Sun is trying to address as they go down there. But on the other hand, I do believe that they have a better product.

With the Personal Iris, you're going into new distribution channels yourselves, aren't you?

Well, not really. To some degree that's true in some of the dealer development. We're getting into some of the channels that companies such as Sun have had going for a while, and we're being reasonably successful at that, but by and large it's still using our direct sales force and selling larger numbers to our big current accounts and to new accounts as they open up.

We are now at a point where Sun was in price a couple of years ago. I'd like to say something about price, though—a lot of people say, because we're at the same price, "oh, you must be competing with Sun," or "you must be competing with so-and-so." All I have to do is point out that you can buy a $15,000 motorcycle or a $15,000 pickup truck—they're not the same product, they're not the same market. We have a $15,000 3D machine, and it's going to have some overlapping capabilities with a 2D machine, such as the one Sun sells. But they're really very different products.

Eventually, I think there'll be some conflict in the market, but at the present time we don't see much.

How are you planning to keep your edge?

Aggressively developing software packages that really use 3D so that we offer something that's distinctly visibly different. That's the nice thing about graphics, it's visible. Distinctive. So the key is getting people to make the transition from the flat earth society into the world of 3D.

Is there any overlap between the NeXT's market and yours?

Personally, I think the NeXT has just sort of come along too late. It'll be a modestly successful company, but I don't think there's any way it would ever be a successful enough company to be a real threat to any of the current workstation companies or personal computer companies.

Do you agree with Scott McNealy that it was a bad idea not to make it a RISC machine?

Yeah. I agree with everything he said there, actually, in that particular line. Just a bunch of mistakes. I mean, why use a non-standard operating system?

And the 68030 is relatively old news at this point.

Oh yeah, that was a bad mistake. And part of the reason for Mach was that [Jobs] viewed it as something that fit what he saw as a need—it kind of fits in the whole scheme of the object-oriented world. And it's a university-based system, and ostensibly he's after the university market, so he says. Of course he's also smart enough to realize that there's a lot of follow-on from the university market.

Sure. Look at the Macintosh.

Yes. But there was just mistake after mistake. Probably the biggest one being, being so late.

And it's not done being late yet.

I think he understimated the amount of work required to get it there, the amount of money that was going to be required to get it there, and there's no reason why, if Sun does the job that they should do, they shouldn't just totally blow him out of the water.

I don't see him as a threat to us. He's got some designs on some aspects of what we do. He sees the value of what we do—Steve's a pretty insightful guy, he sees what's going on here. But his ability to pull off that plus all of the other things he's doing is—I'd say it's very unlikely.

We don't think about NeXT. We don't worry about NeXT. Hardly ever think about them any more, especially since he isn't shipping. Once he starts shipping, I think there'll be something you can look at.

Steve's name is only going to carry him so far. The rubber hits the road someplace out there. (laughs) ■

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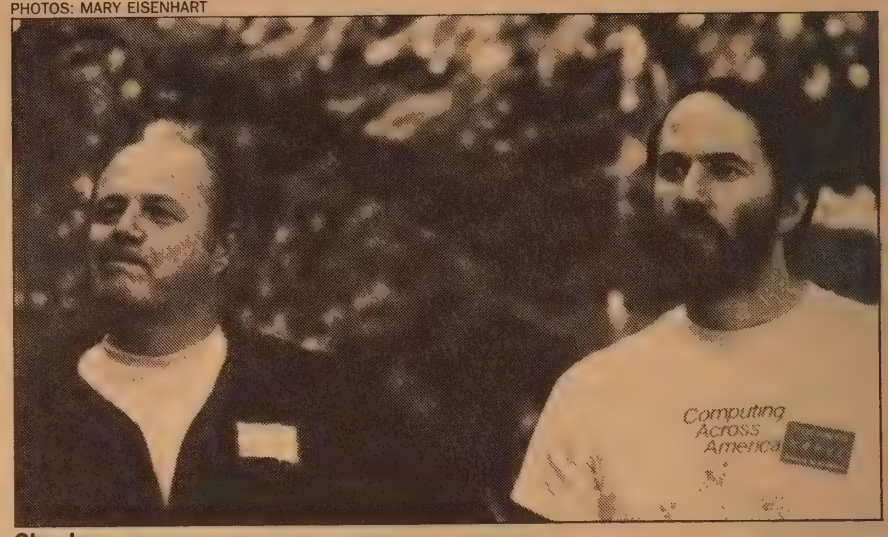
HACKERS

It's as current as today's headlines—"Hackers" perpetrating yet another outrage against some network, or using their expertise to sell secrets to the Soviets, or breaking into yet another virtual universe where they're not supposed to be.

Not even the Hackers Conference itself, an annual gathering which incorporates some of the industry's founding fathers as well as latter-day wizards into its ranks, is insulated from the institutionalized misuse of a term which, in the hallowed days of MIT, was a badge of honor. The most recent conference last fall was the target of a sensationalist hatchet job by CBS News, which led to impassioned discussion not only of media distortion but of whether the name itself should be abandoned. (In one of life's nicer ironies, as the Internet "virus" made its well-publicized rounds, CBS found itself interviewing the selfsame hackers it sensationalized the previous week, several of whom were instrumental in eradicating the rogue code.)

We offer herewith some perspectives on hackerdom. The Rev. Barlow offers his analysis of the situation; Bob Bickford, an organizer of the Hackers Conference, attempts to rescue the term from its abusers; and finally, from the closing discussion of last year's conference, the hackers themselves speak out on issues of interest.

PHOTOS: MARY EISENHART



Chuck Moore (l), author of Forth, and Steve (Computing Across America) Roberts consider a dubious proposition.

Hackers listening to alternate versions of the future.

The Empire Strikes Back

We Are Not Amused

By Rev. John Perry Barlow

So I'm manning the Hackers Conference registration desk when I'm suddenly eye-to-bugeye with the bombed-out visage of Cap'n Crunch, the original phone phreak and King of the Outlaw Hackers. I'm told he always looks frantic. He does.

"Like most of them, Draper approached Ma Bell with a pure heart. In all of his transcontinental electronic excursions he rarely called an actual person."

"Hey, man, I gotta have a new name tag. This one's too conspicuous." He tore at his Hello My Name Is John Draper as though it were the Mark of Cain.

"What's the problem?" I wanted to know.

"Them!" he snarled with a directional jerk of his head. I followed its hazy vector to a camera crew clearly marked CBS. And I was as startled as he was. I had thought that the Hackers Conference was about as open to the press as a meeting of the College of Cardinals. Why else would we be sequestered away in the hills if not to avoid this newest and most myopic of All-Seeing Eyes?

Not that it bothered me much. Most of the experiences I'd had with the press were positive. I'd found that all I had to do was make friends with them. It's hard to speak too falsely of one's friends. In the narrow corridors of Wyoming politics or around the Grateful Dead, this is easy enough to accomplish. Once she was a friend, you could give a reporter as much of the truth as she'd tolerate. If it's entertainment one's after, the truth is usually more entertaining in its weirdness than anything a person can make up.

So while I hadn't expected this video crew, fear of them didn't toss me under the table either. But my minor celebrity is an easier thing to bear than John Draper's. His began back in 1971 when *Esquire* magazine did an article about the first real hackers, a group of the criminally curious called phone phreaks. These

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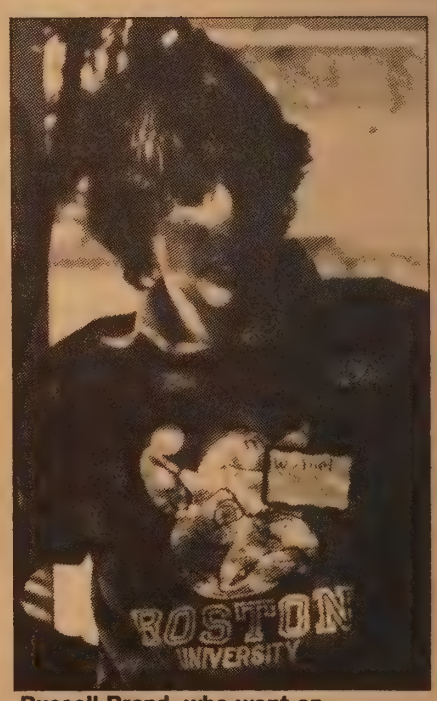
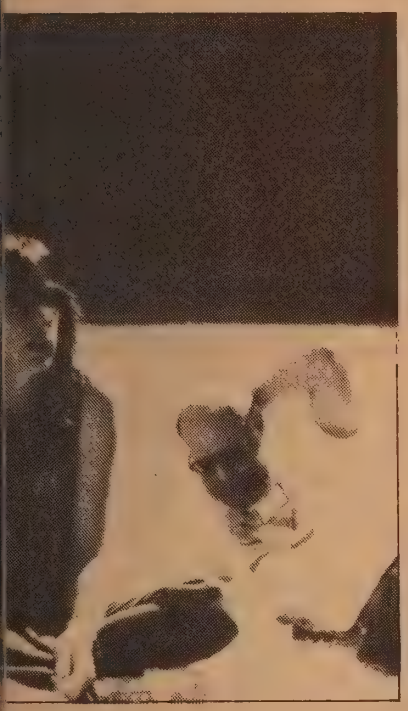
Chris Espinosa disavows responsibility for Apple's price increases.

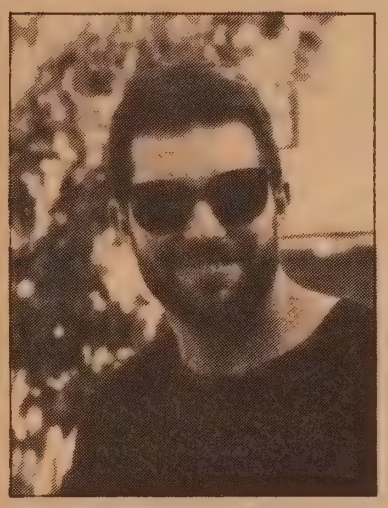


Russell Brand, who went on to vanquish the Internet worm at Lawrence Livermore.

EVISITED

Ted Nelson contemplates his next big idea.





Fearless correspondent Brock Meeks.

Hackers Speak

The following remarks are excerpted from the public forum which traditionally closes each year's Hackers Conference. In 1988, the initial question was "when will computers be as ubiquitous as cars and telephones?" The discussion took off from there.

Chris Espinosa: "I think the assumption that computers are ever going to be as simple and as taken for granted as cars and telephones isn't a valid one. Because I think that regardless of how we try to simplify the technology, there's always the urge to do something new, and whatever's new is going to be by definition interesting, and by [being] interesting it's not going to be immediately obvious to a lot of people.

"So I think computers, even if they become as ubiquitous as cars and telephones, will never be as essentially obvious as those are, and there'll always be a point where you have to learn about them, just because there'll be something new to learn. The great thing about them is that they're a blank canvas. A telephone's not a blank canvas. A car is not a blank canvas. The computer's a blank canvas, so it'll never be as simple and as taken for granted as cars and telephones."

Brett Glass: "Computers will become ubiquitous in our homes when they fundamentally improve the quality of our lives. That's when we're going to see them everywhere."

Todd Rundgren: "I don't think it'll happen before people realize, in the same way they did with the automobile, if this analogy is extensible, that they put a value on what comes out of it. And that isn't necessarily a good thing, because by extension the automobile metaphor—we got places faster, which essentially allowed us, in most cases, to shovel a larger pile of bull****.

"So just getting them ubiquitous isn't necessarily an objective, I don't think; people have to realize the value, and sometimes making people realize the value is a completely false concept, because maybe they really don't need it anyway. And maybe we're just trying to extend our mentality onto people who don't care now and maybe never will care."

Chip Morningstar: "I think computers aren't going to become ubiquitous in people's houses until somebody comes up with a good answer to the question, 'Well, what the hell good are they anyway?'

"In some sense, I think we're not technology-limited to nearly the same degree that we're imagination-limited. I couldn't live without some kind of computerized word processor for writing, but most people don't write. Most people in their day-to-day lives in this country couldn't care less about word processors or spreadsheets or any of those things. They don't use those things. And until you can come up with something for them to do, something that's useful to them, I don't think you're going to get any kind of penetration. So what we have to do is figure out something for these things to do that's actually going to make people want them. And

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> "In some sense, I think we're not technology-limited to nearly the same degree that we're imagination-limited."

Are You A Hacker?

By Bob Bickford

Some time ago (*MicroTimes*, January 1987) I defined a Hacker as "Any person who derives joy from discovering ways to circumvent limitations." Unfortunately this definition has yet to make the evening news in the way that a teenager who robs a bank with his telephone does.

The criminal Hackers, or "Crackers," have been making news while the rest of us are virtually invisible. For every irresponsible fool writing a virus program, there are at least 20 software engineers earning a living discovering ways to circumvent limitations. When the much-publicized InterNet worm was released by an irresponsible Hacker, hundreds of other Hackers applied their considerable talents to controlling and eradicating the problem: the brilliance and creativity brought to this task are typical of hacking as I define it.

Working on the yearly Hackers Conferences has been a mixed experience. On the one hand, helping to bring together 200 of the most brilliant people alive today, and then interacting with them for an entire weekend, is immensely rewarding. On the other hand, trying to explain to other people that a Hackers Conference is not a Gathering Of Nefarious Criminals Out To Wreak Havoc Upon Western Civilization gets a bit wearing at times. Trying to convince a caller that repeatedly crashing his school district's computer from a pay phone will not, emphatically not, qualify him for an invitation to the

> "...trying to explain to other people that a Hackers Conference is not a Gathering Of Nefarious Criminals Out To Wreak Havoc Upon Western Civilization gets a bit wearing at times."

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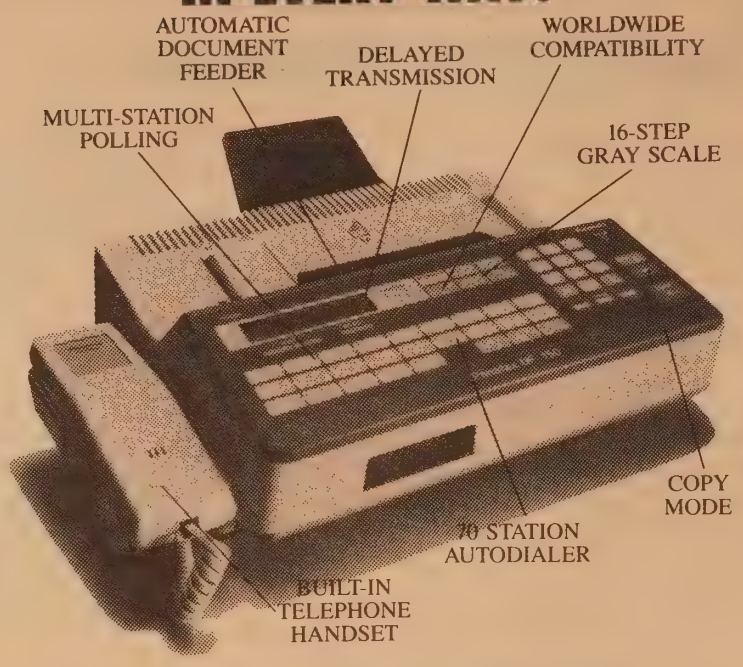

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The Empire Strikes Back

continued from page 74

were people who failed to appreciate the sacred nature of America's precious communication network and devised ways to enter it without paying or otherwise playing by the rules.

Like most of them, Draper approached Ma Bell with a pure heart. In all of his transcontinental electronic excursions, he rarely called an actual person. Exploring the system was more his object than ripping it off. Like a bright six-year-old in front of a Macintosh, he just wanted to understand the damned thing.

> "The most important thing to know about hackers is that they are funny. They are as funny as physicists and in much the same way. They share the physicist's affection for word play, puns, and anagrams."

The authorities were characteristically weak on such a fine distinction as this. They read the *Esquire* article and found him as easy to track down as Jobs and Wozniak had. They busted him once in 1972 and then, when he'd almost reached the end of his probation in 1977, busted him again with something that looked a lot like entrapment. This time he went to jail, there to contemplate what happens to famous enemies of the phone company.

He wasn't the only one to get jumpy about the CBS crew. The registration desk was widely (and incorrectly) thought to be an information node. Over the course of the afternoon, I was asked many apprehensive questions about *them*. Who had them in, what did they want, etc.

I thought everybody was being paranoid. But that's my stock response to suspicion of any sort. Even when it's proven wrong, I'd far rather go through life regarding fear as a pathological ailment than a necessary condition for survival.

My duties at the desk were limited. I passed out special conference t-shirts (most of them extra large), made up name tags, provided bunk assignments, and passed out a form which Lee Felsenstein had cooked up.

Lee is one of the patron saints of California hacking. He founded the Homebrew Computer Club (with Gordon French and Fred Moore), designed the Osborne, and has sunk his life's work and earnings into a digitized proletarian hookup called Community Memory. Lee's form was a very analog part of the process.

It asked: "What's your claim to fame? What's your secret claim to fame? Set down at least seven associational words which (partially) describe you." It also asked for current age in earth years and at what age the respondent peaked.

This information was to be grist for Lee's mill later in the evening, when it was his grand ambition to single-handedly roast everyone at the conference. Grabbing forms at random, he would summon the authors to the dais and interrogate them on their answers. Like some of Lee's other ideas, this one was a little longer on inspired good will than ease of execution. By the time he'd worked over the first battery of roastees, I realized that wading through the entire stack of forms would take 'til Halloween.

But I was also ready to sit through it for the duration. It was very funny. The answers themselves were pretty amusing, in a nerdy sort of way. Like the kid whose seven associational words were: "five, three, six, one, two, four, seven," or the fellow who said he worked as a "Rocket scientist for Yoyodyne Propulsion," and whose secret claim to fame lay in being the Buddha. Stuff like that.

The most important thing to know about hackers is that they are funny. They are as funny as physicists and in much the same way. They share the physicist's affection for word play, puns, and anagrams. They like Lewis Carroll and *Finnegan's Wake*. They understand the holy value of the prank. They enjoy incongruities, whether computerized bicycles or bicyclized computers.

This is not surprising when you think about how humor works and what it can do. In that sacred moment when a joke happens, two sets of assumptions come together in way that briefly annihilates them both. Until normality has been restored, there is a fertile confusion. For however short a time, the joke has blasted open a window of opportunity for creation. I suspect that this is why Schopenhauer said that humor was the only divine quality to be found in humanity. The same attributes that make humor a virtual necessity to creative people render it suspect to those who place a lot of importance on punctual trains.

Before this deadly century, humanity seemed to have a proper high regard for the wisdom of laughter. We deified the Trickster. "Primitive" mythology is a laff-riot of these vexing deities, coyotes, ravens, rabbits,

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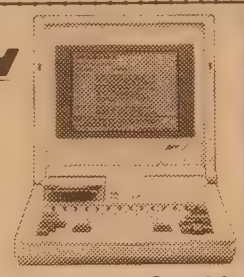

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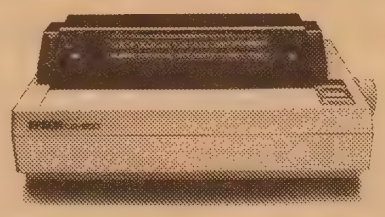

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The Empire Strikes Back

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monkeys. The Europeans had Hermes, Thoth, Loki, and The Fool from the Tarot deck to Shakespeare.

The closest we've come to a mythical trickster lately was Charlie Chaplin's Little Tramp, an image which has since been co-opted by one of the least light-hearted institutions this side of the Iron Curtain.

Real sideways laugh-the-sludge-out-of-your-head humor has become an hermetic art, squeezed into such isolated provinces as AA meetings, linear accelerator control rooms, and computer labs. Meanwhile, out there in Televisionland, they seem to think that Bob Hope and *Saturday Night Live* are both still funny. They're even developing a taste for the wit of George Bush. It's as if the only good jokes were private.

Which gives them an even stronger adhesive function in binding community. Laughter unto tears is profoundly uniting to all who share it.

While Lee Felsenstein is having his way with the hackers, the CBS camera crew takes it all in. Gradually, by their whispered consultations with him, I realize that the fellow sitting two chairs away from me is the "reporter," the talking head who will tell this tale. It is a chilling discovery. He is not laughing. He isn't even occasionally smiling as most folks do in the presence of a joke they don't get.

Indeed, he has the pig-eyed choler of a Joe McCarthy which only sulls darker as the evening ascends into lunacy. He isn't even taking notes. He just sits there, sour and barely present. And this was the man whose impressions of the affair will, by tomorrow evening, be shared by several million Americans.

For a crazy moment, I want to drape my arm around his shoulders and include him in the fun. I want to murmur conspiratorially about what a pleasant and interesting world it will be after the hackers have taken over, coaxing his shy nods into enthusiastic grins. No dice. He is radiating like plutonium. He is in The Zone.

The Zone is my current working name for what I believe to be the most common human emotional state. It is where most people, myself included, pass much of their quietly desperate lives. To the best of my knowledge, it's never been named before. In the Zone, nothing happens.

By this I don't mean that The Zone is a halcyon and serene mental condition. Its only correspondence to those states aspired to by Oriental mystics is outward dispassion. It's more like being in an iron lung than any condition you'd achieve by sitting Zazen. Rather than being detached from the illusory world of perceptions, one is painfully separated from a world which seems quite real.

When one is in The Zone, all the things that make life worth surviving...Beauty, Truth, Discovery, Love, Adventure, Sex, Joy, Laughter, the Perception of the Holy...are too much trouble. One eats and sleeps and does as little as is necessary to protect the future presence of these two amenities. When someone is Zoned Out, he doesn't simply say "If it ain't broke, don't fix it." He says, "Don't fix it." Period. Don't move. Accept no information. Do not, under any circumstance, rock the boat.

In The Zone, one is paralyzed with boredom, and because he is paralyzed, incapable of doing anything about it. No actions are possible while Zoned Out, but one remains capable of all the worst emotions. The Zone is quite congenial to fear, resentment, anger, suspicion, jealousy, and guilt. It is the homeland of low self-esteem, ruled by the reptilian proto-brain at the base of the skull.

> "The man from CBS didn't wake up. He didn't have to. His story had been written for him long before he came looking for us. By confirming the Zone-oid suspicion that smart people are out there plotting against you, it would disturb no one's daze."

I'd be inclined to call it Evil, but that term's probably too archaic for modern tastes. You might relate it more comfortably to Freud's notion of Thanatos or, if you're really a child of your times, to what Luke Skywalker called The Dark Side. But there's no need to drape black bunting all over it. It's bad enough all by itself. Absolutely no one likes being in The Zone. What's peculiar is that not only do we allow it to exist, we encourage it.

Which brings me back to television. McLuhan's characterization of TV as a passive medium has never seemed more accurate to me than it does now. And I'm beginning to wonder if the principal purpose of television isn't to give the appearance that its viewers are doing something.

The Zone induces catatonia, but sitting in one's living room and staring into space is not yet socially acceptable. We need something which we can appear to be watching, something which moves and makes noise,

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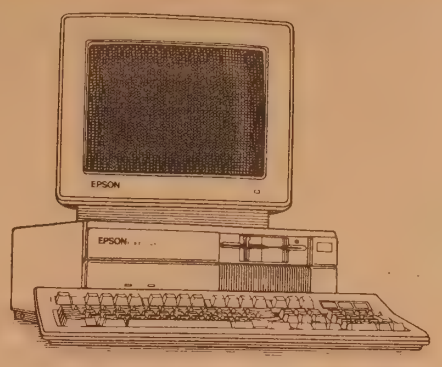

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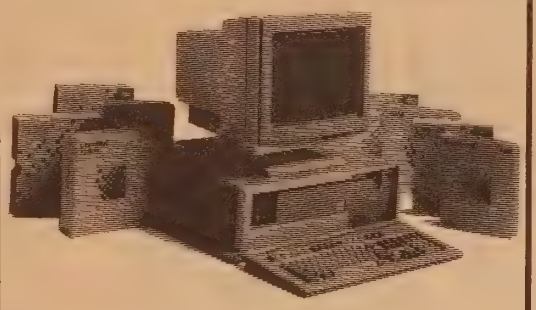

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The Empire Strikes Back

continued from page 78

but does not disturb our narrowed consciousness with actual information.

So TV unreels shootings, stabbings, beer commercials, and jock fests to half-lit souls who know only that they don't feel very good and that they might feel better if they went out and bought something.

While I believe that The Zone has always been a basic human condition, twilight seems to be advancing across the American mind more rapidly than ever. Possibly it's a response to datashock. Like snoozing children in the back of a car, we don't want to be awakened to the information of arrival. We just want to go on sleeping.

"Buddha," by the way, is Sanskrit for something like "He who woke up."

The man from CBS didn't wake up. He didn't have to. His story had been written for him long before he came looking for us. By confirming the Zone-oid suspicion that smart people are out there plotting against you, it would disturb no one's daze.

The next evening his voice could be heard throughout the land announcing that: "A small revolutionary army is meeting in the hills above California's Silicon Valley this weekend, plotting their next attacks on the valley below, the heart of the nation's computer industry. They call themselves computer hackers." Next attacks? These people *created* the nation's computer industry. Now they were guerrillas in the hills.

It got worse at once. Hackers, we were told, were capable of creating "never before dreamed-of crime. Because for a computer, the only difference between a hundred and a million is a few zeros." And so, seamlessly into Donn Parker, computer crime expert at SRI, saying, "In fact, criminals today have a new problem to deal with: and that is 'how much should I take?' They can take any amount they want."

Cut to the office of Richard Fitzmaurice of Pacific Bell. Mr. Fitzmaurice has the same porcine sobriety as the CBS reporter. You could examine his face with an electron microscope and never find a laugh line. He is certainly not laughing now.

Instead he comes on with a Jack Webb voice and the following verdict: "You'll hear the term computer hacker, computer cracker; we call them computer criminals."

Next CBS ran some footage of a entirely wigged-out astronomer who described, rather pleasantly, the mouse-like entry of a cracker into his Defense computer. His hair looked like sparks from a Van de Graaff generator and he was playing with a yo-yo during the interview.

This clip seemed totally gratuitous until I realized its impact on someone watching from The Zone. "Story's about some kind of computer geeks...here's one of them educated fools now...why, this weirdo must be a hacker. So that's what they look like!" Icing the cake, the fellow's an astronomer. A recent NSF poll revealed that 21% of American adults think that the Sun orbits the Earth. Which should tell us a lot about the credibility of astronomers...

Quick back to Donn Parker who says, in summation, "A hacker today is an extremely potentially dangerous person. He can do almost anything he wants to do in your computer."

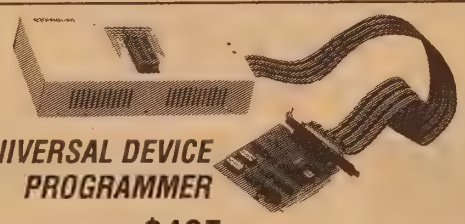
The final shot of the story showed an amazingly violent video game in progress in the Hackers Conference computer room. There were still no hacker faces to be seen, only the backs of woolly heads staring into the cathode ray battle zone. The voice-over injected this note of balance: "But at the hacker's camp in the hills, there's recognition that in any revolutionary army there will be a few rogues and criminals. But that's no reason, they say, to slow down the revolution."

It was Zone journalism at its finest. In less than five minutes, we had been tried for both treason and the grandest larceny, convicted on both charges, and all without the appearance of a single one of the accused. CBS didn't *need* Cap'n Crunch.

> "These people were dangerous ...they had economic authority. In their heads lay the fields and ore seams of future industry."

Gradually I remembered the last time I had been part of something so intentionally demonized by the press. It was in 1966 and I had just helped found a chapter of SDS at Wesleyan. We were still high on concepts like participatory democracy and working within the system for social change. A TV station from Hartford covered one of our meetings and returned with the previously simulated news that we were preparing an armed insurrection.

Some years later a few of the people in that group were bearing arms



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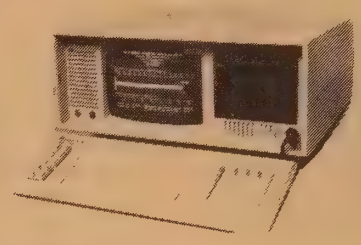

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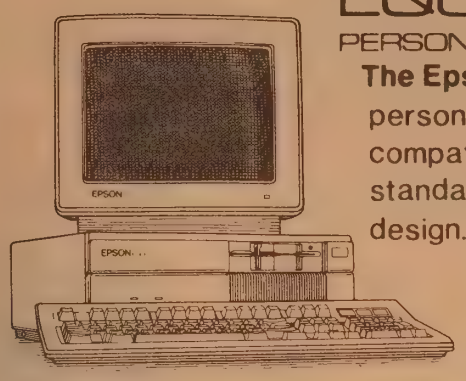

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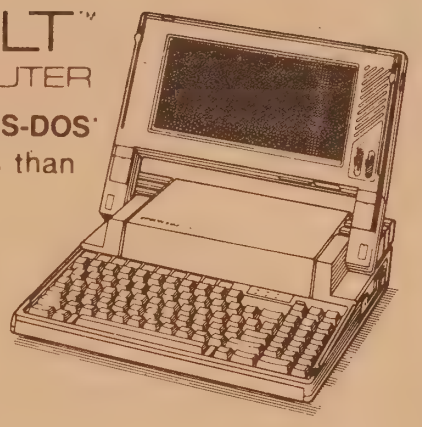

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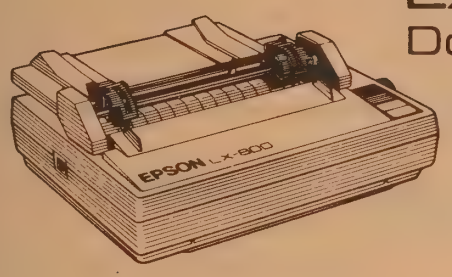

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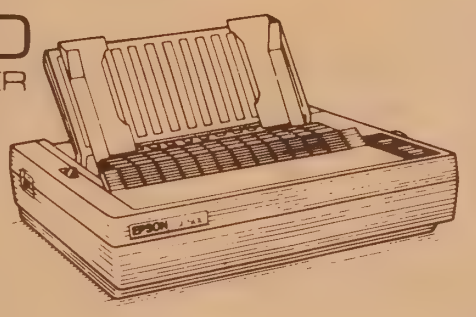

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The Empire Strikes Back

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against the state. I always wondered whether they didn't just decide that it were as well to be hung for a sheep as a lamb. Figuring, in other words, that if you've been judged guilty, you might as well by God be guilty.

The parallels were worth considering. 1966 was the last time I found myself around so many people who were not only so interested in basic social change but had the intellectual means to bring it about. In fact, the hackers had it in them to be a great deal more powerful than my college classmates. These people were dangerous in a way which America has always credited with reality: they had economic authority. In their heads lay the fields and ore seams of future industry.

If they became persuaded of the charges made against them by CBS, they could cause trouble on a scale which would make the Weathermen look like a prayer in a tornado. Things would happen which no one at CBS would be able to describe accurately. Even in the unlikely event that he wanted to. ■

Hackers Speak

continued from page 75

until they want them, they're not going to have them."

Mike Perry: "Computers in every home may not be that important, but the ability of computers to allow individualization of products in lots of little companies whose products will be in every home—*that* will revolutionize people's lives. I can't buy a pair of shoes that fits me. It's very difficult. Now, that's important to me, and when I can get something custom made trivially because everything is custom made, my life will be better. And that will happen in the not-too-distant future. The Industrial Revolution was important because it provided abundance through uniformity. This revolution is important because it provides diverse abundance."

Todd Rundgren: "I wanted to make a comment about the danger of expecting computers to do things that we traditionally expect people to do, like, for instance, talking. And making certain kinds of decisions for us and expressing an aesthetic. And things that we traditionally expect for other human beings. This is the inherent danger in the ubiquitousness of technology. You know, nobody was ever prevented from expressing themselves with the tools that we already have. The problem is that people don't do it already, and there's certainly a danger of us abdicating the little bit of creativity that we still retain for ourselves to machines. That, to me, is the most dangerous thing of all."

David Oster: "I wrote the last nine versions of *Stars* on the Macintosh. My program was running on the Mac in the office. Somebody came into the office and said, 'Is that a real program, or did somebody write that?' So long as ordinary guys believe that commercial products are gifts of the gods, so long as they believe that they're out of their reach, we're going to have this dichotomy between those who have the tools and those who don't. Until we teach rock and roll music in our high schools, until we teach video production in our grammar schools, we won't have the revolution."

Scott Wiener: "I've got a couple of things. There's something I've been thinking about, and that's this analogy to the food chain. The information chain. There's information providers, there's various levels of abstraction. And we're all in the generation that made the transition from reality being experience to reality being the experience of television. We are the watershed generation. What's happening now is that we're moving higher and higher up the food chain. More and more information is about other information that's been collected from other second sources. And we're eight, nine, ten generations removed from the original.

"The Industrial Revolution was important because it provided abundance through uniformity. This revolution is important because it provides diverse abundance."

"Now the problem with this is, since we've already accepted television as reality, we can no longer discern how far away from the source we are.

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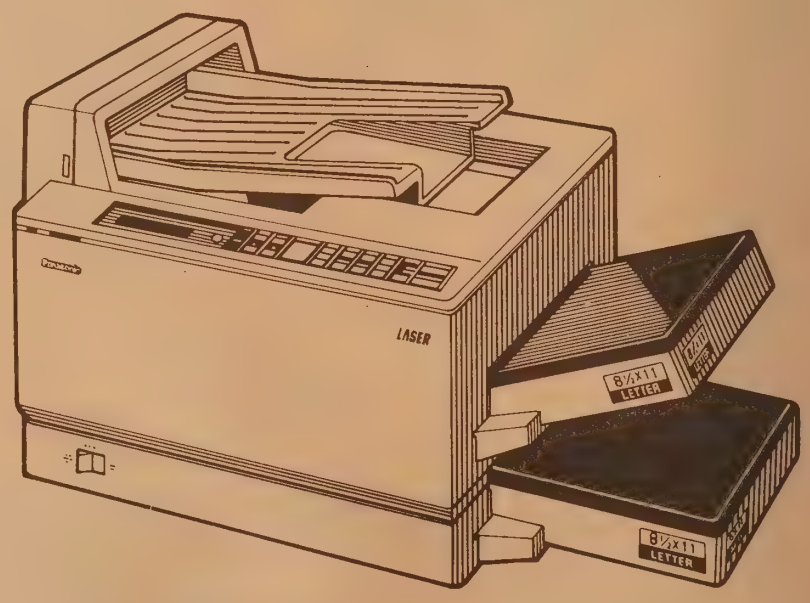

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Hackers Speak

continued from page 82

recorded by VISA. VISA signed a contract giving the rights to that information to TRW, for free. They give TRW the information. This has been in place for all the major credit card companies. TRW puts it in a big database and sells it back to VISA. Okay? It's your information, you can't even get at it. So when I hear we're going to have satellites, that we can look around on, believe me, when there's profit in what you do in your life, you're not going to own what you do in your life."

Allen Baum: "It's probably a cliche that knowledge is power, but we've seen it yesterday—CBS is broadcasting stuff, and they control it. That's a lot of power.

"TRW has a lot of information there and they have a lot of power, and I think the only way that hackers are going to change the world is to enable people to manipulate that information so that they have their own power. One of the best ideas I heard was simply teaching TV production techniques in schools, letting them see what the networks are doing. Teaching computers in school, letting them see what TRW is doing, so they actually see what's going on and they can actually decide for themselves what it is that they're seeing."

Steve Roberts: "A quick personal perspective—I've been traveling for about five years, and a pretty common question is 'where do you call home?' And I finally decided that home is data space, home is this network of information systems that I live in, and ham radio—it all sort of boils down to information. And what's happened from that is my neighborhood has become global, and it's an unusual sort of perspective, because I have this sort of enclave of stability, as Toffler said, that is entirely made out of information, and the key point is that it has no geographical limits.

"I think one of the most important things that needs to be hacked is the system of artificial boundaries that's made by governments. You know, we have a lot of artificial lines crisscrossing this planet which have nothing to do with people and nothing to do with any kind of reality or information or anything else. And people crossing those lines are harassed, there are information tariffs, product tariffs, all these things that have nothing to do with us.

> "...I finally decided that home is data space, home is this network of information systems that I live in, and ham radio...."

"And it seems to me that with these tools, we're just about the only subculture that has a set of extremely powerful information tools that sort of supersedes the kinds of things the governments find important. You know, we can all communicate with each other, we can do packet radio and networking all over the globe, and if anything at all needs to be hacked, it's the relationship between these tools and the planet that supports them. So I think it's time to open a few more doors." ■

Are You A Hacker?

continued from page 75

conference can be a bit annoying. None of this would be a problem if we hadn't let a small minority—the Crackers—steal the show, and become associated with the word "Hacker" in the minds of the general public.

I write software for a company that builds medical image processing equipment. My code controls a product that can, and often does, improve the quality of medical care, reduce its cost, or both. I derive great pleasure from working out new designs (or improvements). I have a great distaste for any limitations. When I develop a piece of software that works around some barrier, I tend to have a silly grin plastered across my face. When some ignorant reporter writes a story that equates the work I do with expensive but childish pranks committed by someone calling himself a "Hacker," I see red.

Are you a Hacker? If you want to break rules just for the sake of breaking rules, or just to inflict harm upon some perceived enemy, forget it. But if you delight in your work, almost to the point of being a workaholic, if finding the solution to a problem can be not just a satisfying, but almost an ecstatic experience, you probably are. If you sometimes take on problems just for the sake of finding the solution, then you're in good company, with virtually every inventor whose name appears in your high school history book, and with the many thousands of brilliant people who have created the "computer revolution." ■

Copyright © 1989 by Bob Bickford. All rights reserved. Bob Bickford lives and works in Marin County, often Hacking late into the night, and (usually) enjoying it immensely. His wife, Greta, only tolerates this because she's an animation hacker and sometimes does the same thing. Bob can be reached through uucp at well!rab.

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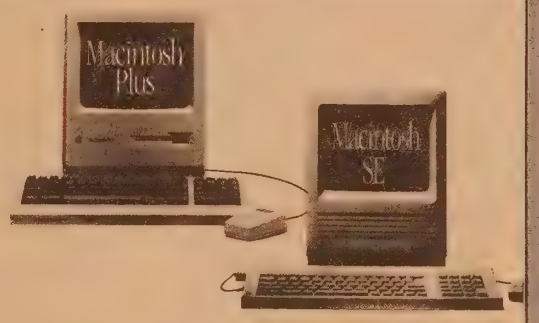

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CD-ROM And Its Descendants: An Introduction

A Look At The Alphabet Soup Of Compact Disc Standards, Their Differences, And What They Do.

By Les Cowan

Since CD-ROM, which stands for Compact Disc Read Only Memory, was first demonstrated publicly in 1984, it has spawned progeny like the old woman in the shoe. CD-I, CD-ROM XA, CD-V, CVD, CD-WO, THOR-CD, and DVI are all offspring of CD-ROM, and a lot of users are so confused that, like the matron in the nursery rhyme, they don't know what to do.

CD-ROM

The progenitor, CD-ROM, is a single sided, read-only disk that holds between about 550 and 650 Mb of data, depending on whether a disk is manufactured to tight enough tolerances that the outer few millimeters are usable.

Physically, CD-ROM is itself the child of the original 4.72" (120 mm) audio CD which has been so spectacularly successful as a consumer music product. An audio CD made under ideal manufacturing conditions holds 74 minutes, 44 seconds of music. (Reportedly, a top executive at Sony insisted on this duration so that one disk could hold all of his favorite recording of Beethoven's *Ninth Symphony*.) Since then a 3.5" audio CD has also been introduced, aimed at the pop music market and offering 20 minutes of music per single sided disk.

The significant difference between CD and CD-ROM, and among all the other variants as well, is the way the data are logically formatted before being stamped into the physical disk. Formatting schemes differ in their hospitality to different data types. The audio CD is formatted in a way that favors the sequential playing of music. CD-ROM disks can contain music, just like CDs, but they can also contain text, numbers, video, graphics, or any other kind of data that can be digitized. The CD-ROM standard specifies extra error correction, which suits it for data, but how the data are organized on the disk is left up to individual applications developers.

CD-ROM was originally envisioned as a publishing medium for databases consisting primarily of text. It has proven far more versatile than that. Between 400 and 800 commercial CD-ROMs have been published in the U.S. containing everything from encyclopedias, scientific monographs, and listings of books in print to catalogs of old newsreels, collections of raw data from oceanic research projects, and the official airline guide.

CD-I

CD-I was announced by Philips at the first Microsoft CD-ROM conference in March 1986. CD-I, unlike CD-ROM, is not a computer peripheral. It is a standalone product with its own operating system, called CD-RTOS (for Real Time Operating System). CD-I players will also contain their own 68070 microprocessor and special chips for an audio compression technology, called Adaptive Differential Pulse Code Modulation. ADPCM permits extra levels of audio on a CD-ROM, providing longer duration with a slight sacrifice of fidelity. Audio thus compressed can also be interleaved with other data types.

CD-I is a further elaboration of the original audio CD format. Unlike CD-ROM, which leaves the formatting of data types up to the developer, CD-I spells out in detail how each data type is to be formatted. The key to this is interleaving, implemented in the form of a subheader in each block, which indicates what type of data is in that block. CD-RTOS, as a real-time operating system, uses the subheader information to treat each block coming in from the disk according to its data type. For example, an audio block could be played immediately, while a subsequent video block would be mapped into RAM. At the standard CD data rate, the user would hear no interruption to the audio. This would, for example, allow an interactive program to play a recording of a speech while retrieving a photo of the person who delivered it. By the way, this accomplishes two purposes: it enhances the multimedia capability of a disk, and it also provides a mechanism for reducing perceived wait times during retrieval. If you are accessing material of one data type while you wait for material of another, the wait seems less onerous.

CD-I was originally presented as a device exclusively for the consumer and education markets, something you would connect to your television set and operate from the sofa with a remote control device. Philips originally said it would deliver a commercial CD-I player, called CD Viewer, by early 1987. Philips now promises the first CD-I consumer player in the first quarter of 1990. It also plans to introduce an industrial player for the corporate and education markets during the second quarter of 1989, but to hold off marketing it aggressively until mid-1990, after the consumer player is launched.

The industrial player will probably use a computer monitor rather than a television set as a display. Like consumer units, however, these industrial CD-I readers will not be computer peripherals, at least initially, and will use CD-RTOS. CD-I's applications will be similar to those now addressed by videodisks: education, corporate and military training, museum exhibits, and point-of-sale product information.

CD-ROM XA

In September 1988, Microsoft, Sony, and Philips announced something called CD-ROM XA, which stands for Extended Architecture. As with CD-I, the XA specification will also define a standard for interleaving audio data with other data types. Thus, CD-ROM XA is an extension of CD-ROM designed to provide some of the data format specificity that until now was a notable characteristic of CD-I.

XA will use ADPCM. XA disks can use the original, standard CD audio format as well, but cannot interleave it. Eventually, XA may also specify a standard format for each of the other data types, such as computer graphics and video, that CD-I addresses already.

The stated intent of XA is, eventually, to bridge CD-ROM and CD-I. CD-ROM disks will be playable on XA readers, although XA disks played on the same readers will offer more flexible audio capabilities. CD-ROM drives could be adapted to play XA disks by adding ADPCM chips either to the drive or, on a card, to the attached computer.

It is not yet decided whether the XA agreement will also result in CD-I disks playable on XA readers. What is certain, however, is that XA could open up the computer peripheral market to the CD-I applications Philips has been helping to develop. It could sell a lot of Sony's ADPCM chips. And in bringing a new capability to PCs, it would accord with a central theme of Microsoft's traditional long-term strategy.

The significant difference between CD and CD-ROM, and among all the other variants as well, is the way the data are logically formatted before being stamped into the physical disk. Formatting schemes differ in their hospitality to different data types.

The first XA applications will probably go to market in mid-1989. They will play on CD-ROM players, but without the ADPCM capability. To get that you will be able to play them on a CD-I player or on a CD-ROM player connected to a PC with an

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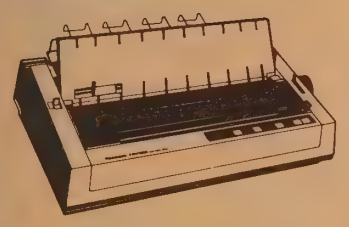
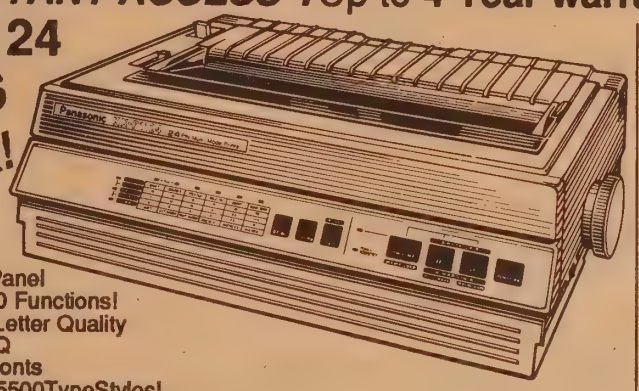


- up to 288cps; 61cps NLQ
- Handles Paper up to 16.5" Wide
- Operator Accessible Font Switch
- Nine Pitches & Graphics Printing
- Built-in Parallel & Serial Ports

$449

KX-P1124

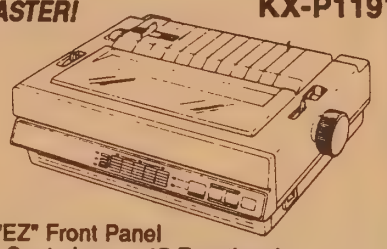
HUNDREDS IN STOCK!



- "EZ-Set" Front Panel controls over 20 Functions!
- 24-Pin for True Letter Quality
- 192cps;63cps LQ
- 5 Resident LQ Fonts
- Combines over 5500TypeStyles!
- Rear, bottom, & front feed paper paths
- 360x360 dpi
- 2 year warranty

$389

FASTER! **KX-P1191**

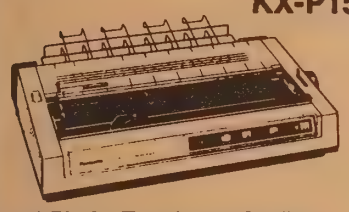


- "EZ" Front Panel Controls over 15 Functions!
- 240 cps; 48 cps NLQ
- 4 Resident NLQ ,& 2 DRAFT Fonts
- Combines over 4600 Type Styles!
- 240x216 dpi res.
- Paper park
- Adjustable Push/PullTractor
- 11.7" Carriage
- 2 year warranty

Introductory Price **$249**

ALL GENUINE PANASONIC RIBBONS IN STOCK.....20% OFF!!

KX-P1524



- 24 Pin for True Letter Quality
- 240cps; 80cps Letter Quality
- Front Card Slot for Optional Letter Quality Fonts
- Memo load for quick single sheet paper load without removing tractor feed
- EZ Set front panel
- Wide 15" Carriage for increased versatility

$549

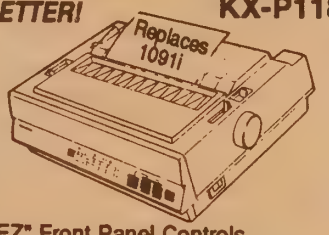
LASER PARTNER ACCESS's "BEST BUY" LASER PRINTER

- 11 Pages per Minute!!
- Two 250-Sheet Paper Cassettes
- 300 dot-per-inch Resolution
- Five Popular Printer Emulations
- Convenient Front Panel Controls
- 512K RAM STANDARD

BONUS!! FREE EXTRA TONER! $45value

$1499

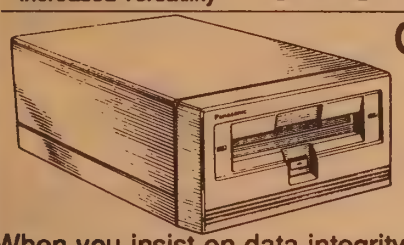
BETTER! **KX-P1180**

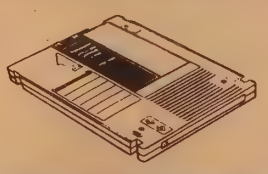


- "EZ" Front Panel Controls over 11 Functions!
- 192 cps; 38 cps NLQ
- 4 Resident NLQ ,& 2 DRAFT Fonts
- Combines over 3400 Type Styles!
- 240x216 dpi res.
- Paper park
- Adjustable Push/PullTractor
- 11.7" Carriage
- 2 year warranty

$199

OPTICAL WORM DRIVE





When you insist on data integrity to protect your important records, this 400MB optical disk drive features guaranteed data protection for at least 10 years!! Removeable, secure cartridge format. It's the fastest, safest, & most inexpensive way to store data!

BONUS!! FREE 400 MegaBytes!!

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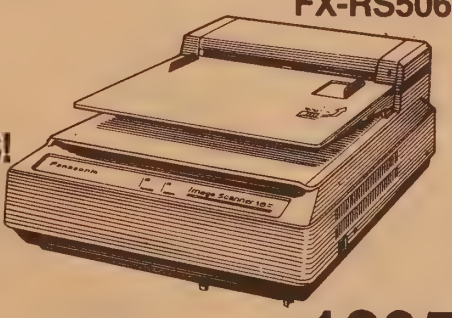
IMAGE SCANNER MAKES ONE THING PERFECTLY CLEAR... YOUR PHOTOGRAPHS!

FX-RS506



Input any printed image onto your computer files.

- Up to 400 dpi res.
- OCR Compatible
- 16-Level grayscale

$1295

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FAX 247-4448

NOW thru April 16th

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- 800 Line Items to choose from!!

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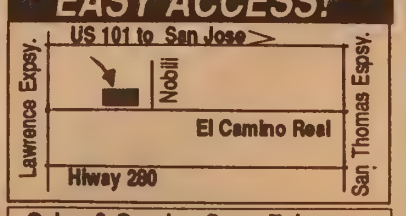

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LOTS OF

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WE'RE FACTORY AUTHORIZED FOR SALES AND SERVICE

...with up to **3 Year Warranty** Available! Corporate accounts welcome!

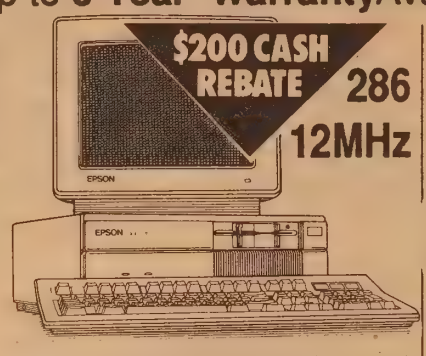
EQUITY™ I+

- Powerful 8088 Microprocessor
- 4.77 or 10 MHz
- 5 Full Size Expansion Slots
- Clock/Calendar w/ Battery Backup
- 640K RAM
- 360K Floppy Drive
- Parallel & Serial Ports
- 360K Floppy Drive
- MS DOS & GW BASIC
- Enhanced Keyboard

Reg $845
Rebate 125

Monitor not included

$720



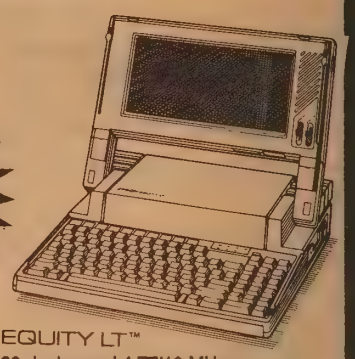
EQUITY™ II+

- Powerful 80286, 8/12Mhz Microprocessor
- 640K RAM...expandable to 15.5 Meg
- 3 Half-Height Mass Storage Slots
- 6 Full-size Expansion Slots
- Serial & Parallel Ports
- 1.2MB Floppy Drive
- MS DOS 3.3,GW Basic, XTree Software
- Small Footprint
- Enhanced Keyboard

EQUITY™ Ie

- Uses 3,5" Diskettes for up to 720K of Information, twice the capacity of 5.25" diskettes
- MCGA analog video for over 256,000 colors
- Fast 8/10 MHz 8086 Microprocessor
- 640K RAM
- Four Full Length Expansion Slots
- Serial, Parallel, & Mouse Ports
- MS DOS 3.3

CALL!... PRICE TOO LOW TO PRINT!



EQUITY LT™

- NEC V30 dual-speed 4.77/10 MHz Microprocessor
- Battery powered 20MB Internal Hard Disk Option
- Two optional, detatchable LCD Screens (Supertwist LCD or Backlit LCD)
- Two Internal Expansion Slots
- Serial, Parallel, & 5.25" External Floppy Drive Ports
- 640K RAM
- Full featured 85 Key Keyboard
- MS DOS 3.2, GW Basic, & Laplink Software
- Weighs less than 13 Pounds

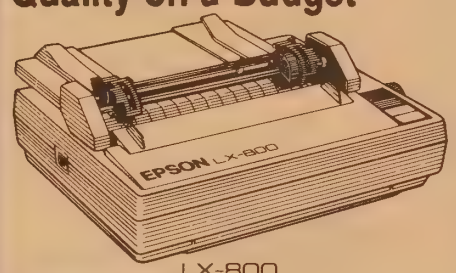
HURRY!!.....COMPUTER REBATES END MARCH 31st!

WHEN YOU'VE GOT AN EPSON, YOU'VE GOT A LOT OF COMPANY.™ **EPSON®**

BONUS!!500 SHEETS of PRINTER PAPER + EPSON DUST COVER..$19 Value... just $10!

WITH PRINTER PURCHASE

LX800... Quality on a Budget

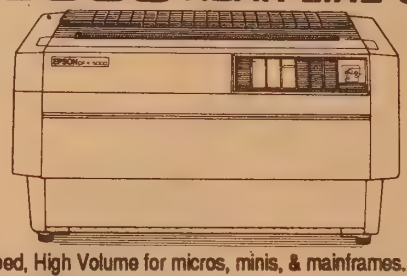


LX-800

- 180cps;30cps NLQ
- Easy typestyle selection
- Versatile Paper Handling
- Roman & San Serif Fonts

$179

DFX-5000 NEAR LINE SPEED!



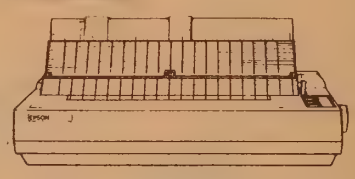
- High Speed, High Volume for micros, minis, & mainframes. For big printing jobs.
- Near line speed! 533cps in Super Draft Mode; 480cps Draft; 80cps NLQ
- Wide Carriage
- Dual push tractor system features two paper paths for enhanced flexibility.
- Handles 6 Part carbonless forms
- Well insulated cabinet for low noise level

EX800... VERY FAST COLOR!

- 300CPS
- 54CPS NLQ
- 8 Typestyles
- Optional Color Kit Available...$50

$449

FX1050



- 264cps
- 54cps NLQ
- 136 col.

$499

24 Pin Printers for True Letter Quality

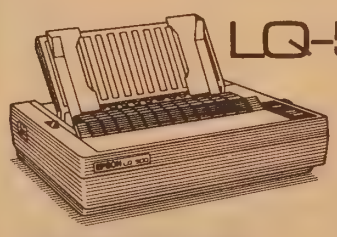
LQ850 80 Column **$50 REBATE**
LQ950 110 Column **$75 REBATE**
LQ1050 136 Column..**$100 REBATE**

ALL THREE MODELS FEATURE:

- 264cps; 88 cps Letter Quality
- Push Tractor Feed & Friction Feed
- Easy Font,Pitch, & Typestyle Selection
- Only 55db Noise Level (Draft Mode)

Purchase a 24-pin Epson LQ-500, LQ-850, LQ-950 or LQ-1050 printer **BETWEEN FEBRUARY 10 AND APRIL 30, 1989** and a check will be sent to you.

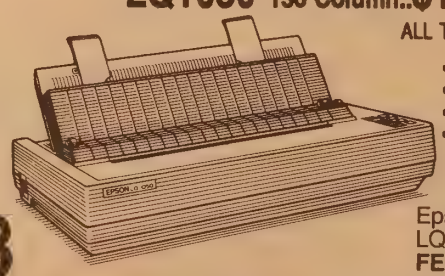
LQ-500



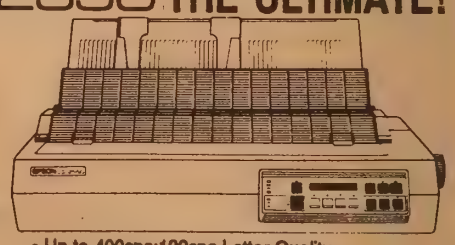
- 180cps; 60cps Letter Quality
- Auto Single Sheet Loading
- Easy Font,Pitch, & Typestyle Selection
- "Shadow & Outline Print Modes

Our Reg Low Price $313
Less Factory Rebate $25
Your Net Price

$288



LQ-2550 THE ULTIMATE!



- Up to 400cps;133cps Letter Quality
- High resolution Graphics...up to 360x360 dpi
- 7-Color Printing
- 7 Resident Letter Quality Fonts
- Changes to Fanfold Paper,single sheets, envelopes, & forms with a touch of a button
- LCD SelectType Front Control Panel

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- 800 Line Items to choose from!!

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ACCESSORIES

ALL GENUINE EPSON RIBBONS, CUT SHEET FEEDERS,FONTS, & TRACTOR FEEDS IN STOCK

20% OFF!

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- $1 Million Inventory!!
- 800 Line Items to choose from!!

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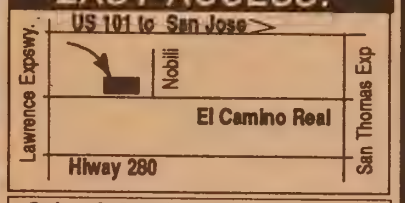

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MON-FRI 10-8 SAT-SUN 10-6

INVENTORY LIQUIDATION!!

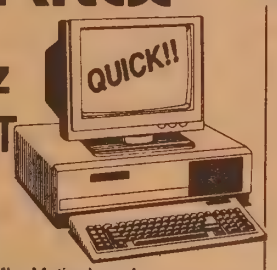
OVERSTOCKED ITEMS...LOOK AT THESE OUTRAGEOUS PRICES!!
Items in this top section limited to stock on hand...FIRST COME...FIRST SAVE (D) indicates floor demo

AT Motherboard 12MHz	$199	**EVEREX** FAX Modem	199	**MAXTOR** 72MB HDD XT1085	$499	**KURTA** IS/ONE Digitizer	327
XT 1.2 MB HD FDC	29	**MITSUBISHI**1280x1024 20"Mon	1999	**TANDON** 30MB removableHDD	697	**STAR** NX1000 Printer	159
EVEREX AT HD/FD Controller	89	**PACKARD BELL** Uniscan(D)	399	**3.5" 720K** Drive Kit	69	**STAR** NX1000 Color Printer	209
Printer Card	13	**PARADISE** EGA350	159	**3.5" 1.44MB** FDD Drive Kit	98	**STAR** NX2400 24 Pin	279
XT Clock Card	18	**PARADISE** VGA+	259	**AT**200w Power Supply	59	**EPSON** LX800 PRINTER (D)	169
AT I/O w/ser,par, & game	37	**ORCHID** ProDesigner 16 Bit	299	**AT**150W Power Supply	49	**EPSON** LQ500 Printer (D)	259
EVEREX Pocket Modem	99	**PANASONIC** FAX Board	599	**TEAC 1.2MB FDD**	88	**MS DOS 4.01**	79
EVEREX 1200BD Ext. Modem	79	**INTEL** Above Board AT 0K	129	**PC** Omnimouse	39	**PC DOS 4.0** w/corrective disks	89
GAME CARD	19	**ARCHIVE**40MB Int.Tape Backup	299	**DFI** Handy Scanner	99	**NEC P5200** Printer	499
MONO GRAPHICS w/PrinterPort	39	**ARCHIVE**60MB Ext Tape Backup	699	**LOGITECH** SCAN MAN Scanner	188	**Enhanced Keyboard**	48

Plus hundreds of other one-of-a-kind specials...too numerous to list!!....Including Software!!

MYLEX

386
20MHz
0 WAIT



Landmark=30
Norton SI= 23

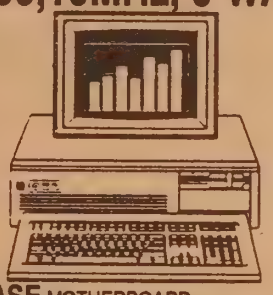
- **MYLEX** 20Mhz Motherboard
- 1MB RAM... expandable to 8MB!
- **Western Digital** Floppy/HDD Controller
- 64K Cache Memory for HDD
- **TEAC** 1.2MB Floppy Drive
- Parallel & Serial Ports
- Supports 3.5" Drives ..up to 1.44MB
- Enhanced Keyboard

$1999

With 40MB HDD & EGA Monitor..$2899

ACCESS / BASE

286,10MHz, 0 WAIT



- **BASE** MOTHERBOARD
- 512K Memory... Expandable to 1MB
- 2 Serial & 1 Parallel Port
- FDD/HDD Controller
- **TEAC** 1.2 MB Floppy Drive
- AT-Style Keyboard

$799

With 20MB HDD & EGA Monitor..$1599

Western Digital

286,12.5MHz
72MB
HYPER-FORMANCE!

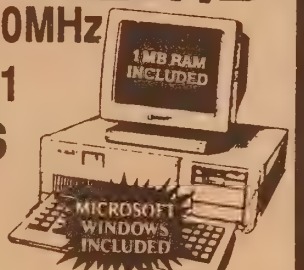
- **Western Digital** Motherboard
- 512K RAM... expandable to 4MB
- **Western Digital** 1 to 1 Interleave HDC
- **MAXTOR** 72 MB 28ms HDD
- **Paradise** EGA 640x480 on Board
- 32K Cache Memory for HDD
- Parallel , Serial, & PS/2 Mouse Ports
- Supports 3.5" Drives ..up to 1.44MB

$1999

• EGA Monitor • DOS 3.3

Tandon

286,10MHz
PCA-1
PLUS



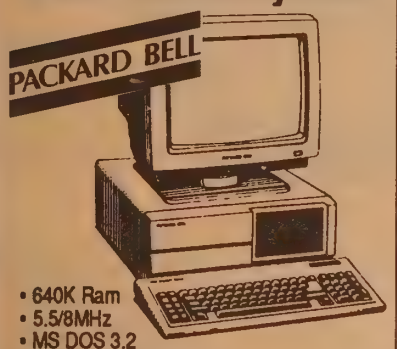
- **1MB** Standard Memory
- 6 Available Expansion Slots
- Hard Disk Controller
- DOS 3.2 OS/2 Ready
- 1 Parallel , 1 Serial Port
- Enhanced Keyboard
- 1.2MB Floppy Drive
- MS Write
- MS Paint
- MS DOS
- Desktop Organizer

$1099

With Mono Monitor & Card.$1199

XTra Savings! ACCESS

8088 Mono System



- 640K Ram
- 5.5/8MHz
- MS DOS 3.2
- 360K Floppy Drive
- MDA/CGA Adaptor
- Clock/Calendar
- 4 Expansion Slots
- Mono Monitor

$749

286,10MHz, 0 WAIT

- FDD/HDD Controller
- Teac 1.2 MB Floppy Drive
- 512K Memory... Expandable to 1MB
- AT-Style Keyboard

$729

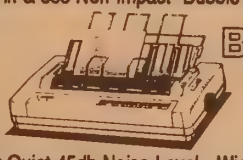
PRINTERS

FUJITSU DL3400

- 24 PIN
- 240cps
- 60cps LQ
- Color Optional

$559

Canon "BUBBLE JET"
Come in & see Non-Impact "Bubble Jet" Tecnology!



$729

- Very Quiet 45db Noise Level • Wide Carriage
- 360 DPI Resolution • 100 Sheet Auto Feeder
- 220cps Hi-Speed;110cps Hi-Quality • 32KbBuffer

EPSON

DFX5000 533cps!		$1697
LQ2550 The Ultimate! 7 Colors		$1099
LQ1050 264cps,88cpsLQ,136col		669*
LQ950 264cps,88cpsLQ,110col		574*
LQ850 264cps,88cpsLQ,80col		519*
LQ500 180cps;60cpsLQ,80col		288*
EX800 300cps,54cps NLQ,80col		429
FX1050 264cps,54cpsNLQ,136col		479
FX850 264cps,54cpsNLQ,80col		375
FX86e 240cps,48cpsNLQ		259
EX800 300cps,60cpsNLQ,80col		429

*** Indicates after Mfgr's Rebate**

EQUITY II+ COMPUTER $989
as shown on opposite page
If purchased by March 31st — After Rebate

LOTS OF PANASONIC!
SEE OUR AD ON ANOTHER PAGE

GRAPHICS CARDS

ORCHID VGA CARD	229
Paradise VGA PLUS...16 Bit	339
Paradise VGA PLUS	269
VIDEO SEVEN FastWrite	369
VIDEO SEVEN VEGA VGA	269
VIDEO SEVEN VRAM	499
EVEREX VGA	269

MYLEX
386 20MHzMotherboard
8 layer;0K-holds up to 8MB! **$1299**

MONITORS

GOLDSTAR EGA $329

NANAO 9070S 16" FlexScan	$969
NANAO 8060H 14" FlexScan	489
NEC MULTISYNC XL	2099
NEC MULTISYNC II	585
NEC MULTISYNC 2A	499
SONY MULTISCAN 1302A	629
SEIKO CM1430 VGA.1024x768!	628
PACKARD BELL FlatScrnMono	129
PACKARD BELL Uniscan	429

MICE

LOGITECH C7	$65
LOGITECH Serial/PS2 New!	89
MITSUBISHI 400DPI "EXPERT"	109
Microsoft Serial/PS2/Paintbrush	119
PC 2-Button Optomechanical	59

MODEMS

EVEREX 1200BD Int.	$59
PARCORP 1200BD Ext.	$99
GOLDSTAR 2400BD Ext.	$139
HAYES 9600BD Ext.	$895

DATA STORAGE

HARD DRIVES

Seagate 40 MB ST 251-1 28ms	419
Seagate 40 MB ST 251 38ms	345
Seagate 30 MB ST 138 3.5"	289
Seagate 30 MB ST 238 w/ RLLcnt	289
Seagate 20 MB ST-125 38ms	249
Seagate 20 MB ST-225	219
KYOCERA 20MB 3.5"	219
TOSHIBA 66MB RLL 25ms 3.5"	439
Msquared 30MB slot card HDD	329
1:1 Interleave Controller	229

ADPCM card. The trouble is, no one appears to be developing such a card at this time. Whether there will ever be such a thing as an XA player is anybody's guess.

CD-V

In 1985 Pioneer and others introduced combination LaserVision/CD players, and thereby managed to start selling a few more videodisk players to people who came into the store for a CD player and liked the idea of getting a videodisk player too for a relatively small increment in cost.

Then in June 1987 Philips announced CD-V, which was not a new technology so much as another strategy for giving LaserVision entertainment videodisks a leg up onto the bandwagon of the audio CD's success. CD-V records both an analog video signal and a digital audio signal on the same disk. CD-V is being marketed primarily as an entertainment medium. On a CD-sized disk it is capable of about six minutes of full motion color video with CD quality stereo sound, just right for one or two MTV clips. It is also available on 3.5", 8" and 12" disks; the latter offers full-length feature films with CD audio quality stereo sound. A CD-V player plays all sizes, as well as standard LaserVision and CD audio disks.

CVD

While CD-V combines two existing technologies into a new product, another product, CVD, rea ly is a new technology. By using a clever electronic trick that effectively multiplies the amount of information that a single pit can hold, its inventor, a Los Gatos, California firm called SOCS Research, Inc., is able to get 20 minutes of full motion color video on a CD-sized disk. SOCS has licensed CVD to a few big names, including Mattel and Hewlett-Packard. Mattel expects to have a video game product based on CVD out for the home market by Christmas 1989, priced under $500 and offering far more realistic adventure type games than have ever been available to consumers.

Hewlett-Packard plans to introduce a half-height drive as a computer peripheral in the second half of 1989. The drive will play both CD-ROM disks containing data and CVD disks containing motion video and numerous video still frames. The Hewlett-Packard product will be used for computer based training.

CD-WO

In March 1988, Philips/Sony announced draft specifications for a hybrid read-only/write-once CD-ROM called CD-WO. CD-WO would include prerecorded information in either CD Audio or CD-ROM formats, and the disk includes an area in which the user can write data in a CD format.

Philips's and Sony's CD-WO would read existing CD and CD-ROM disks, but their CD-WO disks would not be playable on existing CD-ROM readers. Their CD-WO disks would have the same capacity as entirely pre-recorded CD-ROM disks. Yamaha and Fuji Film, in Japan, have announced CD-WO media which would be limited to a 500 Mb capacity but would be playable on existing CD-ROM readers.

By Philips's own testimony, CD-WO may never be released commercially, and if it is, it will not be for another one to two years. Response to its announcement has been very subdued, as has been Sony's participation in promoting it. Moreover, the format faces possible competition from rewritable audio CD products looming on the horizon from Tandy and others.

THOR-CD

In April 1988 Tandy announced THOR-CD, a disk manufacturing technology that could result in erasable audio CDs and erasable CD-ROMs. THOR-CD uses disks composed of two layers of plastic, each of which responds differently to laser light. When exposed to a laser for a certain duration, at a certain intensity, a micron-sized area of the top disk deforms. At a different intensity and duration, the bottom layer pulls the top layer flat again. The drawback of this approach is that the media fatigue after 5,000 to 10,000 erasure cycles, and cease to be erasable. This is not a problem for audio applications; few of us erase a cassette tape more than once or twice, let alone 5,000 times. But many industry observers are skeptical about Tandy's aspirations to an erasable data medium using this technology, and also about its timetable, which envisions the first erasable audio product in

continued on page 134

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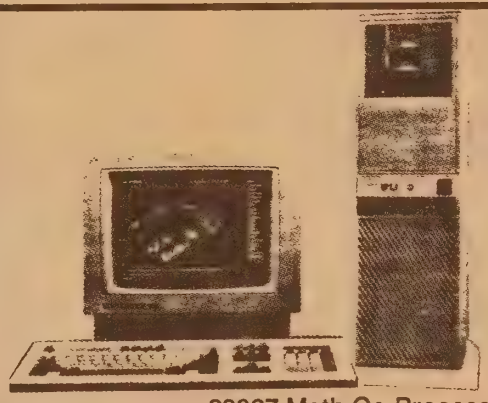

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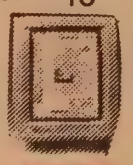

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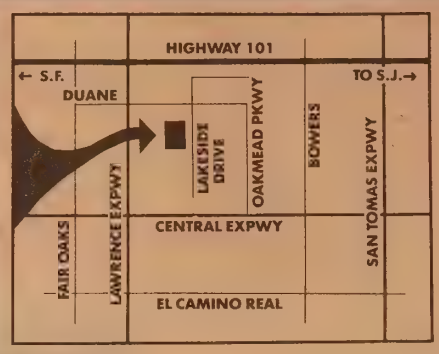

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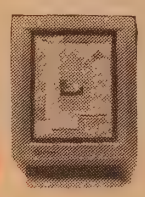

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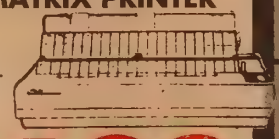

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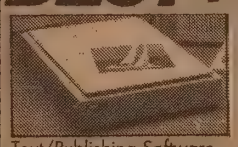

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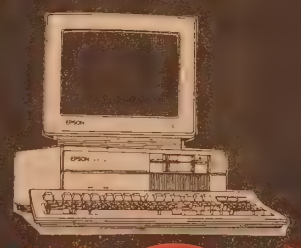

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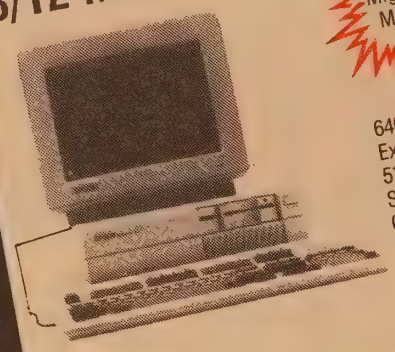

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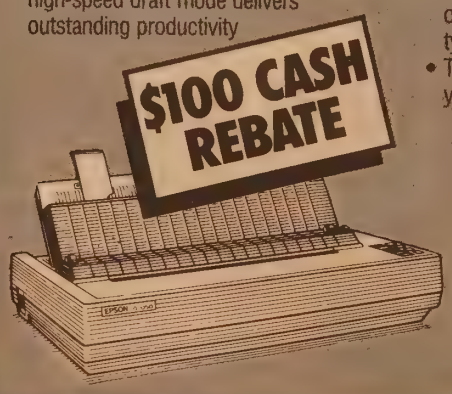

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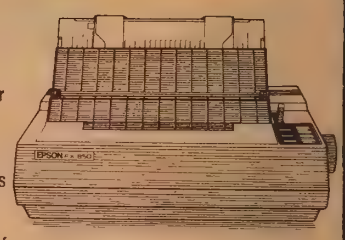

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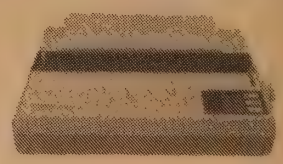

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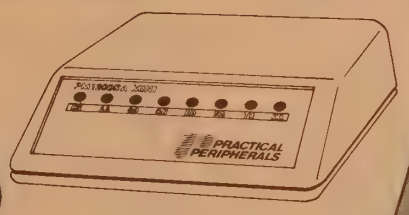

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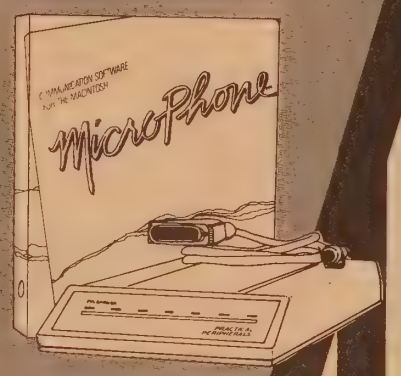

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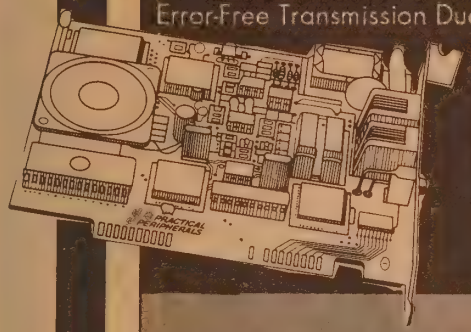

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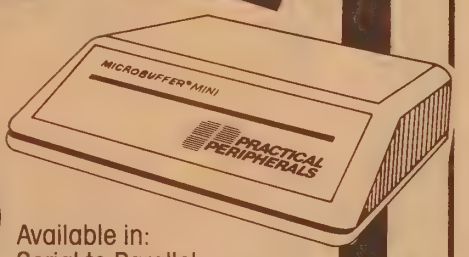

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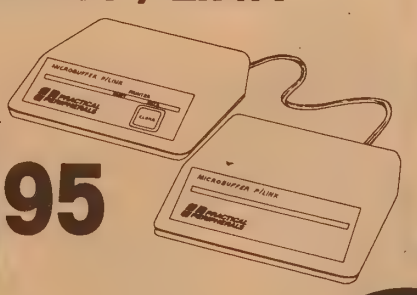

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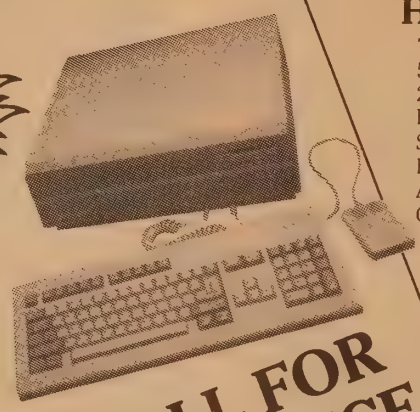

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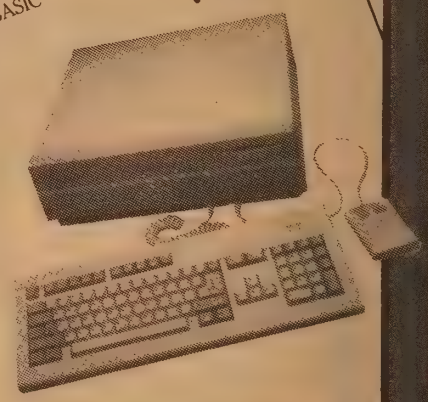

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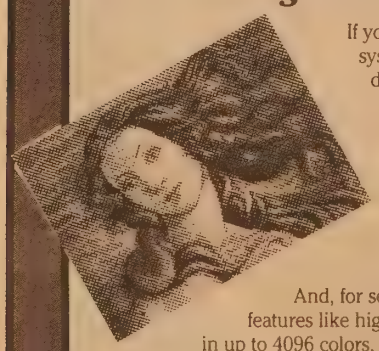

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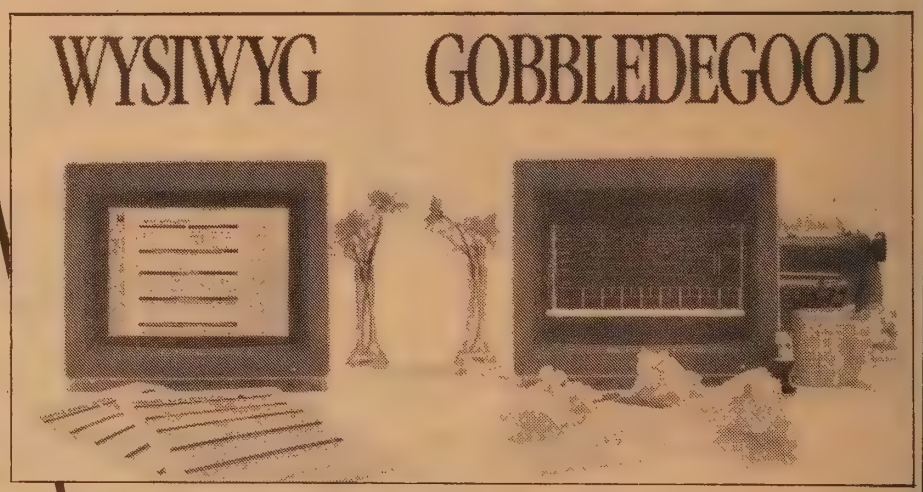

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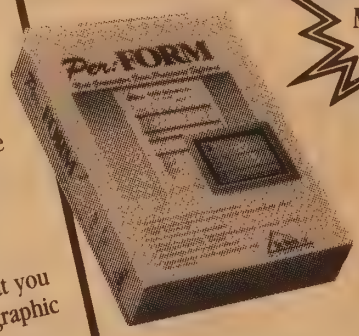

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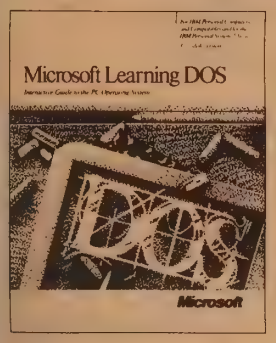

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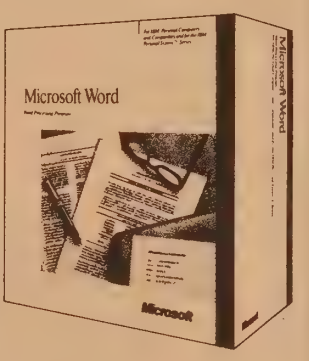

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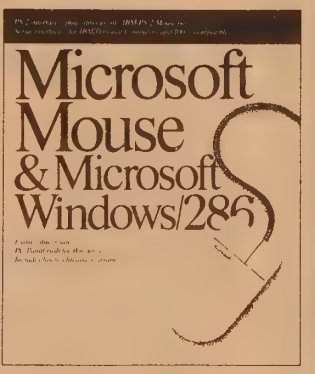

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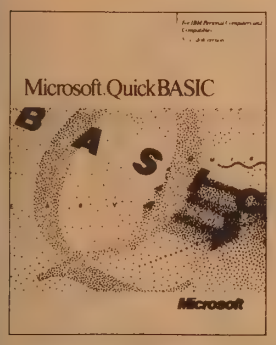

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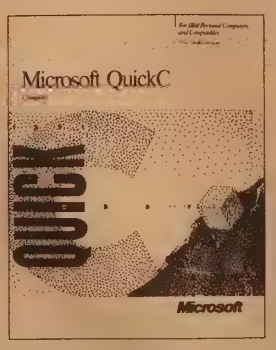

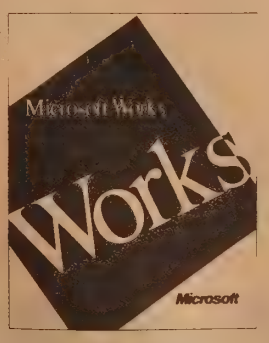

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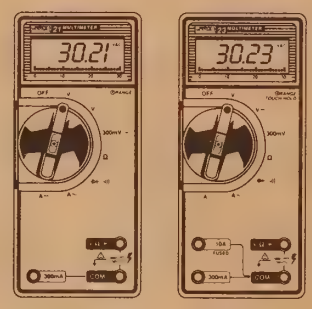

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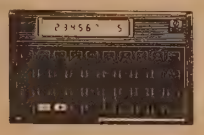

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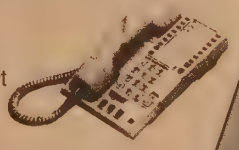

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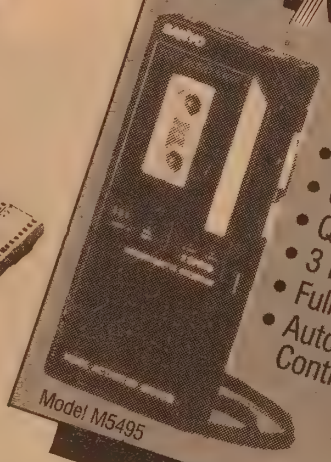

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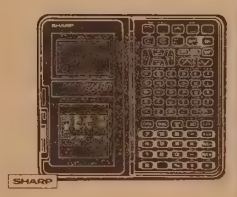

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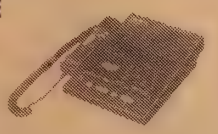

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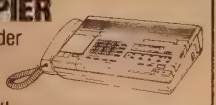

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Finally, an affordable FAX machine designed to meet the needs of the busy executive. Don't worry about running out of paper; this machine has a memory to store documents when the paper runs out. And, you're not limited to letter size documents with Canon's 14" wide paper feeder. Plus a special broadcast feature that allows you to send documents automatically to up to 15 different destinations, polling and delayed send time.

Model FaxPhone 25

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The Compaq SLT/286

A State-Of-The-Art Laptop

By Ed Kahn

The Compaq SLT/286 (top) works well as a laptop but can be converted to a desktop computer with the optional Desktop Expansion Base that includes two expansion slots (right).

When Compaq Computer Corporation introduced its first computer in 1982, it established itself as a major player in the IBM compatible field. This first computer was a winning combination that offered PC compatibility in a luggable package. It had a major impact on the IBM world, and established high standards for clones.

It has always seemed strange for a company that made its initial reputation on full power in a small space not to have offered a laptop computer. Compaq has always maintained that it would not release a laptop until it could do so without compromising features. With the introduction of the SLT/286, we have cause to appreciate Compaq's adherence to high standards.

As one might expect from Compaq, they have forgotten nothing. They claim desktop computing in a laptop, and they come as close as I have seen to delivering the goods.

The SLT/286

Right from the first impression, this box is distinctively different. First, it looks more like a lunch box than a laptop. Its dimensions are roughly 4" X 13" X 9", and it weighs in at 14 pounds. The top hinges up to reveal a backlit 10" diagonal display and a keyboard, which can either stay in place or lift off to go anywhere within the range of the connecting cable. The keyboard has little feet that can extend to make it much like any conventional keyboard—except that there is an embedded numeric keypad and an "Fn" key to activate secondary functions for some of the keys.

A stand-alone numeric keypad ($149) can plug into the keyboard. When placed beside the primary keyboard, it looks much like a conventional keyboard. Unlike so many laptop units, the Compaq keyboard has full-size keys and LED indicators on the NumLock, Caps Lock, and Scroll Lock keys to show whether they are on or off. As with any keyboard, evaluating the feel is subjective, but I am able to work at full speed with this setup. On the back of the computer, however, there is a port for connecting your favorite keyboard if you prefer.

The SLT/286 is powered by an 80286 chip running at 12 MHz. It is fast—11.5 on the Norton scale. The computer comes with only 640 K of RAM, but is expandable to 3.6 Mb, in units of 1Mb which retail for $799 each. As a stand-alone portable, the computer is powered by an internal NiCad battery pack which weighs less than two pounds and fits into the unit under the keyboard. Generally I pre-

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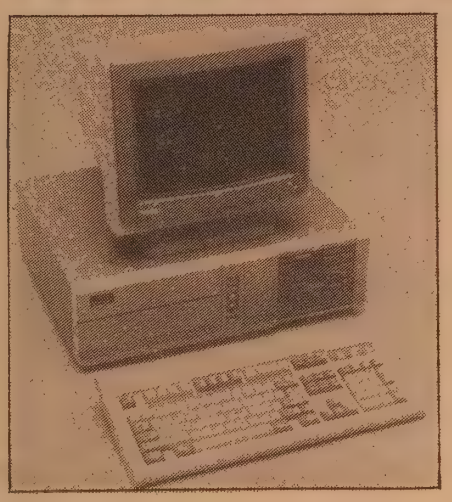

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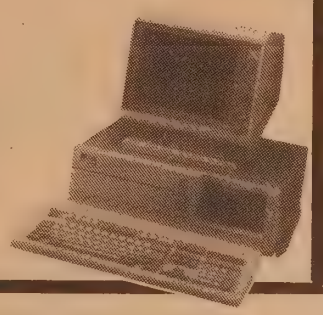

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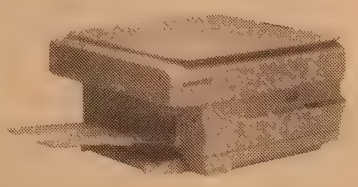

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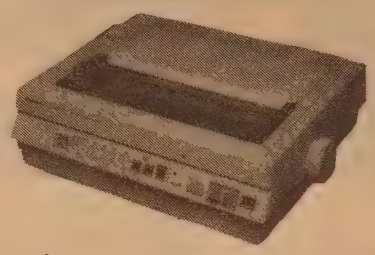

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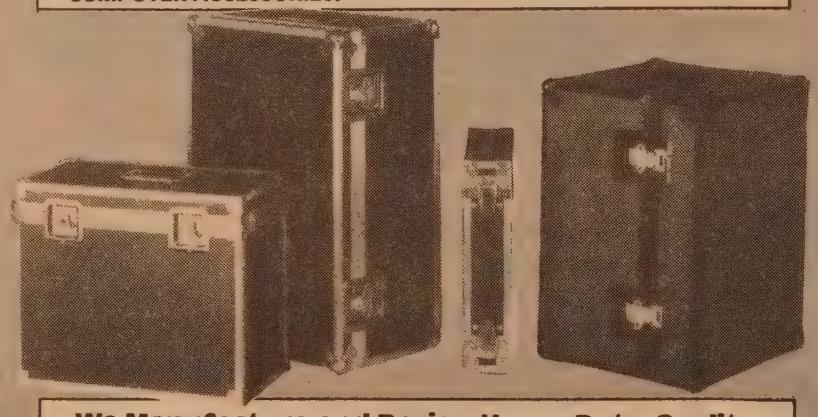

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fer a battery system that is removable, but this battery is so lightweight that I have no objection to either its weight or placement. If you want to save the weight, however, you could remove the battery, as the computer runs perfectly on the (included) AC adapter.

Unlike any other laptop power supply I have seen, the Compaq unit automatically switches from 110 volt to 220/240. This means that use in areas with different electrical standards should involve no more than getting an adapter for the plug. The AC unit serves both as an adapter and a battery charger. The charge time is about an hour and a half if you are not using the computer. If you charge while using the system, it may take as long as three hours. In either case, a light on the power supply tells you whether the battery is fully charged or charging. The battery pack will power the system for up to three hours. Additional batteries list for $129. They are light enough so that it is practical to take a couple along for extended periods of battery operation.

The standard configuration includes a high-density 3 1/2" drive which holds up to 1.44 Mb of data and a 20 Mb hard disk with an access time of 29 ms. In addition, however, if you purchase an External Storage Module ($299) you can add either a 360 K or high density 1.2 Mb floppy drive, both of which carry a list price of $275. If you prefer, you can install a 40 Mb tape backup ($799) in the External Storage Module. The computer is available in a 40 Mb configuration for an additional $600.

Display

The backlit display is the best I have seen so far. It features white letters on a silvery-grey/black background, providing wonderfully clear displays. The computer uses the VGA graphics standard, which provides a resolution of 640 X 480. Up to eight shades of gray are available. If you want full color, a VGA monitor can be attached to the provided port.

Even though the backlit screen is only monochrome, the gray scales give the appearance of extra colors. In *WordStar*, for instance, menus look like they have a pale yellow in addition to the standard white-on-gray. There is great flexibility in the way the system can be configured. By setting the default on reverse video, you can have a black-on-white display which closely resembles the appearance of a typewritten page.

Laptop computers continue to improve, and today's best units inevitably will be surpassed. For now, this is the unit to beat.

The Desktop Laptop

This laptop really can serve as a full-time computer. Besides the VGA interface, there are serial and parallel ports. But the expansion possibilities do not end there. A connector will let you easily add a Desktop Expansion Base ($999) which provides two full-length slots as well as all the standard interfaces. This means that you can connect a full-size color monitor, printer, and keyboard of your choice. You merely unplug the SLT/286 from the Desktop Expansion Base when you want to use the computer as a portable. Two expansion slots doesn't seem like a lot. When you consider, however, that the basic computer has a video adapter, disk controller, and expanded memory capabilities built in, the two slots will allow for networking and anything else you might require.

Many options are available so that you can configure the computer to be just what you want. An internal 2400 baud modem ($599) works flawlessly. If you prefer, the computer will accommodate a second serial port ($149) instead of the modem. This configuration offers increased versatility and also might save you a few bucks if an internal modem is not a high priority. To round out the line of options, you have a choice of operating systems: MS-DOS ($120) or OS/2 ($325). A carrying case ($89) and numeric co-processor ($799) are also available.

While the system is not inexpensive, the basic computer is available at prices considerably below the list $5399. The purchase price includes a one year warranty. There are many features that make this top-of-the-line

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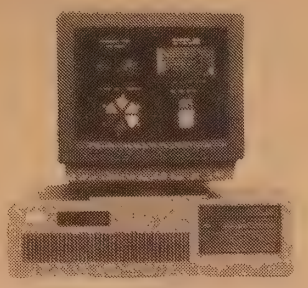

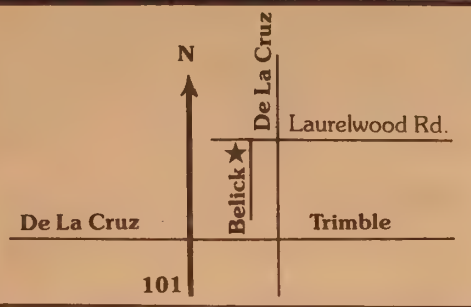

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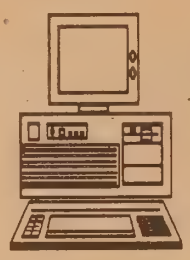

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- 80286 8/16 MHz, 0W, 512K
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- 80386 8/20 MHz, 0W, 1MB
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- 12 MHz 80286
- 512KB, SI = 15.3

286-16 Mother Board $375
- 16 MHz 80286
- 512KB, SI = 18.7

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computer fair value. You really can use it for both a laptop and a desktop unit by adding a full-size color monitor and the keyboard of your choice. So many other laptops can double as desktop and portable units, but their display as a desktop simply is not good enough. The VGA display means that you can have real desktop quality by simply adding a color monitor.

Laptop computers continue to improve, and today's best units inevitably will be surpassed. For now, this is the unit to beat. There are many features that set this computer apart from the competition. Speed of battery recharge and the small size of the battery both add greatly to the appeal of this unit.

Many other laptops can double as desktop and portable units, but their display as a desktop simply is not good enough. The Compaq's VGA display means that you can have real desktop quality by simply adding a color monitor.

Special Features

Compaq has gone out of its way to design an energy efficient system. Through software you can determine the power-down time of internal components. After a specified period of non-use, the modem, hard disk, floppy drive, display, and central processor will each shut down in order to conserve power. They restart as soon as the function is accessed. If they all shut down, the computer can be brought back by touching the Stand By button. As the battery becomes low, the computer alerts you first by LED indicators and finally with beeps that it is time to save and recharge or connect to an external power supply.

The setup program included with the computer allows you to configure most of its features without having to be a highly sophisticated user. A simple menu gives options which you select with the cursor keys and save by keying "enter." You can set the time and date, instruct the system to turn on the modem at power-up, select video attributes, and configure the power saving options as you like.

If you expand the memory, you can configure the additional memory through the Expanded Memory Manager. It will allow you to use this memory for applications requiring the Lotus/Intel/Microsoft Expanded Memory Specification. In addition, you can set up disk caching, which greatly accelerates applications such as databases which need to access the hard disk often. There is also software for setting up a RAM disk.

Documentation

And finally, as we have come to expect from Compaq, the documentation is excellent. Each of the features of the included software is fully explained and illustrated by examples. While jumping into the world of MS-DOS computing for the first time is always a trying experience, the documentation with this unit is as simple and straightforward as could be expected. A system overview introduces the basics of the computer. Individual manuals for each of the optional devices provide the needed instructions. The Operations Guide has a pocket inside the front cover that contains a quick reference guide for when you are traveling with the unit. Also included is a Publications Reference which tells which manuals discuss each of the different topics. Compaq has made sure that getting the most out of the SLT/286 is as easy as possible. For those who require more technical information, a Technical Reference Guide is available ($149). ■

Resources:

Compaq SLT/286 Personal Computer
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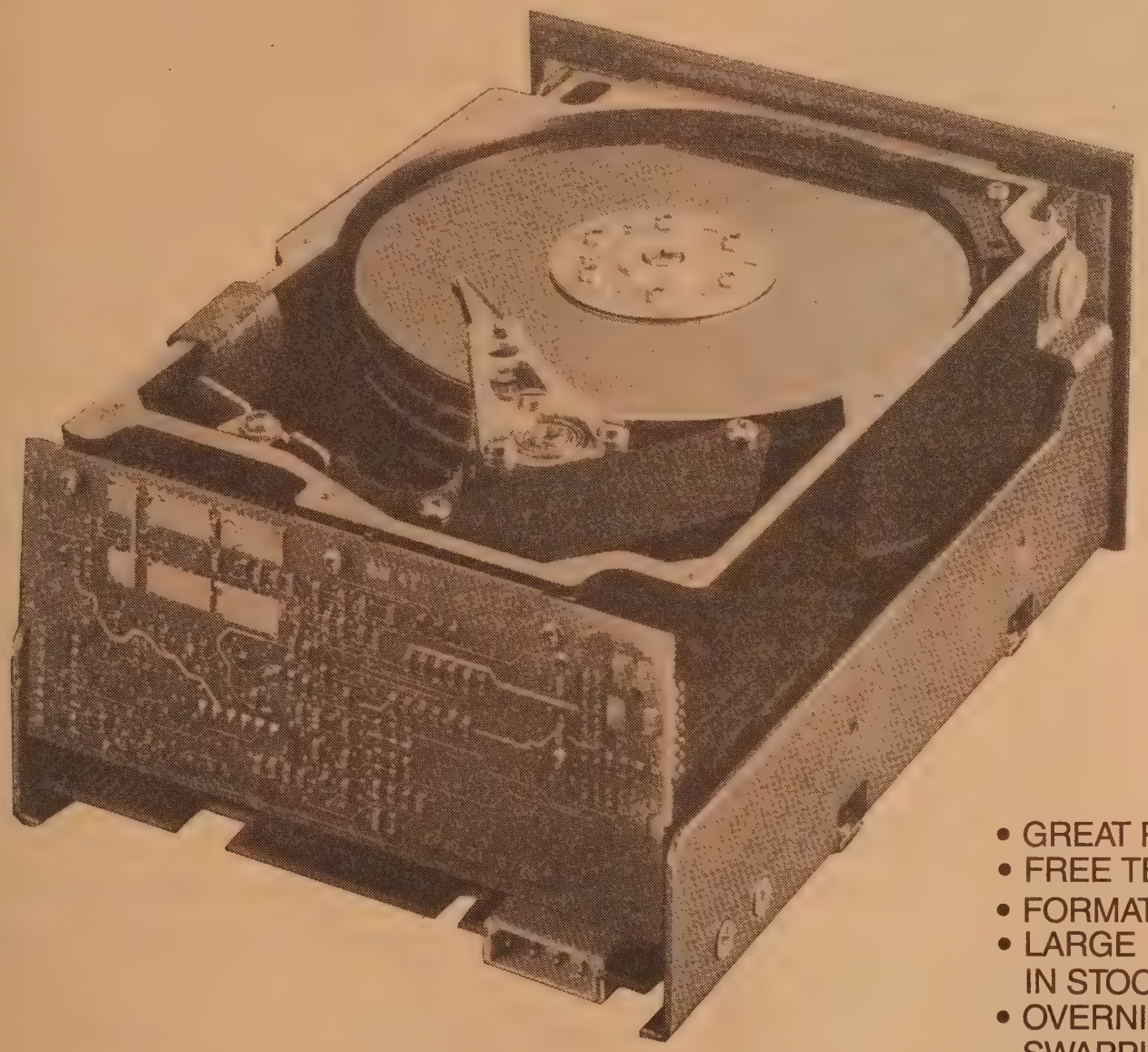

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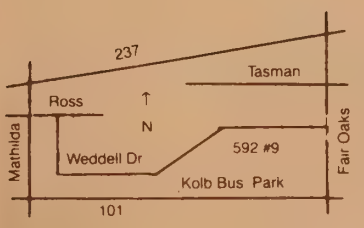

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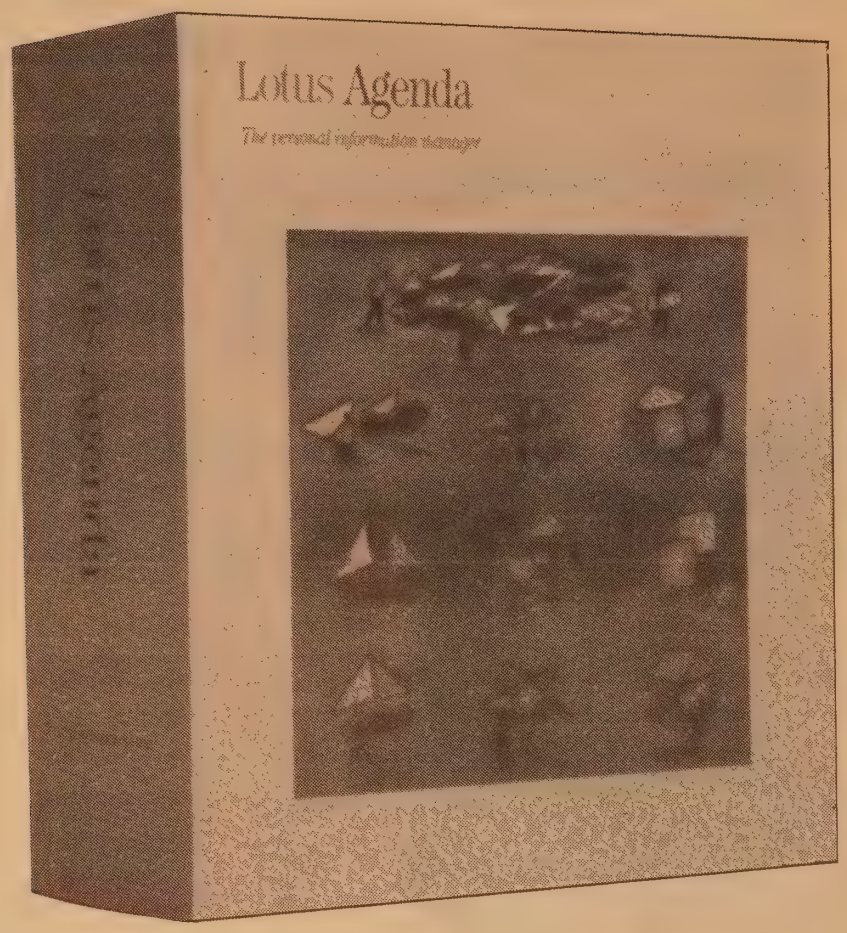

Lotus Agenda is a powerful information manager, but it may be too complex for the average user.

Lotus Agenda

Evaluating The Father Of Personal Information Managers

By Birrell Walsh

Mitch Kapor and Lotus brought us the concept of "Personal Information Manager." We learned we could have free-form information with full interconnection. We would be able to swing through our informational life like Tarzan through the jungle. Lotus educated us successfully; several products came out as competition—saying only, "You know, we're like *Agenda*"—even before *Agenda* appeared.

A Personal Information Manager is an executive assistant for your life. To the basic application (a word-processor, a database, or a financial program) it adds the ability to cross-reference and reorganize your information. If the project is complex, it may not be possible without your cross-referencer. Lotus invented the concept, and they taught us all what it meant. Is their product, *Agenda*, the Personal Information Manager of choice? Yes and no.

Agenda is the most powerful cross-referencer available to us. It will let you organize your information quickly and well, in ways you have never thought of before. But—a sad admission—it is difficult enough that users will be divided into amateurs and mavens, casual users and those who master. It is weak in the presentation of its information.

How Agenda Works

An *Agenda* database is a collection of "items." Each item can be up to 350 words long and can have a "note" of some 10,000 characters attached to it. These items and their notes are then associated with various "categories." Categories are like the headings of an outline. In this *Agenda* is similar to a traditional outliner. The four differences are:

a) Any item can be associated with many different category headings at the same time;

b) *Agenda* can assign items automatically based on text;

c) *Agenda* has an uncanny ability to deal with dates; and

d) *Agenda* lets you look at the information from a number of points of view.

If you have a job that needs doing, you can make an *Agenda* item about it: "Get the Blackstone International video proposal finished by next Monday." And it might fit under various categories: You may have various clients—one of them Blackstone. You may have a number of sorts of work, of which video is only one. You have a number of employees or fellow workers who will take part in the project. And you have a datebook—"What to do when." Where should you put this item?

Agenda will automatically enter this item under "Blackstone," unless you have instructed it otherwise. It will also enter the information under "video." You may have set the program to put all video jobs under "Joe's responsibilities," so the Blackstone video project will automatically appear under Joe's heading in your database. All of this *Agenda* will do for you automatically—some of it because of text in the item, some of it because you have created linkages that forward video projects to a certain person.

Agenda can understand date words. What is really endearing is that *Agenda* understands date words in plain English and in the middle of your text. It will convert the expression "next Monday" into a date and make that the item's "when" date. *Agenda* understands "Tomorrow," "Every Monday," "the first Tuesday of July"—a collection of date expressions that would baffle any other program. Each item has two other automatically-noted dates as well as one in the text—the date on which it was entered into the database, and the date on which it was marked "done."

Agenda can be used to understand dates in the past, which means you can use *Agenda* to track a chronology. A lawyer, a historian, a negotiator with a complex contract history—each of these might buy *Agenda* simply because it is so good with dates.

Finally, *Agenda* allows you to see your data in a number of different ways. You can design these ways of seeing the information and save each one as a "view" in *Agenda*'s View Manager. You might have one view that deals with the responsibilities of various people. The Blackstone item would appear in that view under "Joe." You might have another view that tracks clients, and our sample item would be one of a number of items about the Blackstone company. A third view might be "Next Week." Each week *Agenda* would automatically move into that view all the projects which have a "when" date that fell in the coming work-week. This view would be self-maintaining: *Agenda* checks the system date when it starts and keeps date-dependent views current.

Views can show more than one category and its items. A view can have multiple sections, one for each category. It can have filters that admit only items which meet several criteria. You can also have other categories showing in columns beside the main item, in a format like (Surprise!) Lo-

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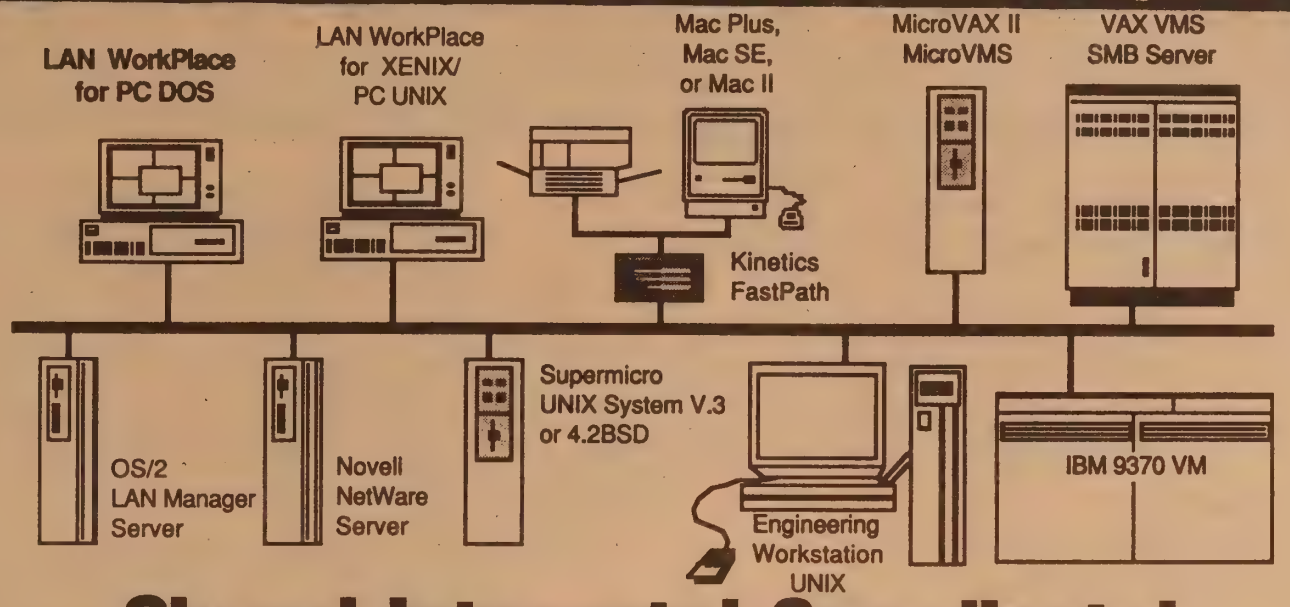
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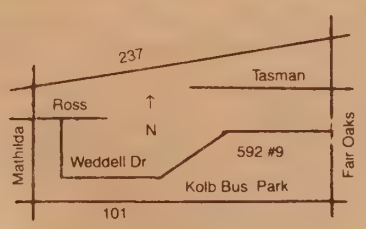

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tus's spreadsheet *1-2-3*. You might have "Client" as the main heading, with our item under "Blackstone," and then to the right have a column for "Person Responsible" and another for "Due Date." The appropriate information would show in each of those columns.

And Now The Bad News

Agenda is fast, rich, and complex in its cross-referencing, and able to handle dates like no other program. How can anyone complain about it? There are, unfortunately, problems with *Agenda* which restrict its usefulness.

One problem flows from the very task of cross-referencing. There are myriads of possible connections. I wrote one database with 214 items and 134 categories. My calculator tells you there are 28,676 possible connections—and that means that *Agenda* must itself be complex to handle all those linkages. And complex it is. Anyone can learn to page through views or enter items. After that, it's uphill. It takes a while to find all the preferences you want to set for daily use, and even to understand all the words. Importing data from other formats can require learning a small, obscure programming language used by a standalone import program. *Agenda* is no worse than *1-2-3*—it is easier if anything—but it takes work. It is not, therefore, a tool for everyone, nor even for someone who wants quick results from it.

It lacks some tools that I wish it had. I wish, for instance, that any item could be a category head, as in an outlining program. Then I could truly enter data in free form and make the connections later. There is a macro language for *Agenda*, but it is feeble. Macros cannot read an item to discover if it contains a particular string. *Lotus 1-2-3*'s macro language has this ability, and if *Agenda* macros had it, it would double the "intelligence" of the program.

The most serious problem is *Agenda*'s meager word-processing facilities. Items are restricted to 350 words, and notes to 10,000 characters—a total of about 2,000 words per item. That means a writer could not do any significant work within *Agenda*. You have to leave *Agenda* to do the very work for which you most want its power. The print formatting is awkward, so you would not want to use it for most of your daily memos and correspondence. This superior text-base has poor text handling.

Is *Agenda* the Personal Information Manager for you? *Agenda* shines in managing chronological information or complexly-related text. It would be a moment's work to find everything about the Blackstone project that had to do with the month of October, 1987. A lawyer could use it to organize a difficult case. A scholar might use it to sort out a critical period in history. Interfaces have been written so *Agenda* can organize news stories from a wire service, and the Royal Bank of Canada is using it to monitor international news for developments that bode good or ill for the bank.

For all of these uses *Agenda* is ideal. But they all imply there is a certain critical mass of information to deal with. *Agenda*'s own complexity and its limited text-handling means that you will not buy it unless you have that critical mass. *Agenda* is not a simple tool to organize daily business, nor is it the one application a writer or a businessperson will keep open all day. That is sad, because Lotus invented this kind of application. I wish they had brought it forth as well as they preached it. ■

See related side bar on next page

Third Party Products For Agenda

The Idea Generator

Experience In Software has been helping people think for some time. We reviewed their negotiating software earlier this year.

They have released a version of their creativity software, *The Idea Generator*, which links to both *Agenda* and *GrandView.* The product prompts you to define a problem, and then it asks you various questions. As you answer the questions, you are forced to look at the problem from a multitude of viewpoints. Inevitably you get new ideas.

The *Agenda* link is interesting. After you have used *The Idea Generator*, which is a standalone product, you can have all the ideas and things-to-do moved to an *Agenda* database (or to a *GrandView* outline). The *Agenda* database is ready for you to use as is, or you can expand upon the ideas and use *Agenda*'s linking abilities to cross-reference ideas.

The Idea Generator is good a product to have around, if you need good ideas—and who doesn't?

The Idea Generator *v. 2*
$195
Experience in Software
2039 Shattuck Avenue Suite 201
Berkeley, CA 94704
(415)644-0694

AgendaWare

Robert and Lauren Flast were beta testers for *Agenda.* They have been building applications since before the product was on the market, and the work they do models *Agenda* at its best.

My favorite of their *Agenda* works is a database of US Senators. It is cross-referenced by state, party, term of service, committee and subcommittee membership, experience, education, and other biography. This database alone could pay for *Agenda* in a lobbyist's office. It shows *Agenda* at its best—as a manager of complex, changing research information.

They have used *Agenda* to transcribe and annotate testimony. They have developed ancillary programs to import Dow Jones online data into *Agenda.* They have built a multi-city restaurant guide. These example databases are available from the Flasts. I dare say they would also help you develop your own application if you wished to hire them.

The AgendaWare Specialists
660 Fairmont Avenue
Westfield, NJ 07090
(201)232-4674

Books

Agenda has already inspired third-party books. The books give you a chance to see what *Agenda* can do before you buy it. Skilled users (like the authors below) demonstrate a lot of possibilities that the creators of the program may never have conceived.

Using Agenda
By Mary Campbell
Osborne/McGraw-Hill
$21.95
Ms. Campbell has written a hefty 762-page tome on *Agenda.* It covers everything in the program and gives examples. The book is methodical, and makes a good desk companion as you construct complicated applications. It also has thorough coverage of the utilities that come with *Agenda.*

The Lotus Guide To Agenda
Robert and Lauren Flast
Lotus Books/Addison-Wesley
The authors are the same people who bring you AgendaWare. You can be sure they know whereof they speak. They used *Agenda* to construct the book itself. If you are an author and are considering *Agenda* as your research tool, here is a chance to see it at work.

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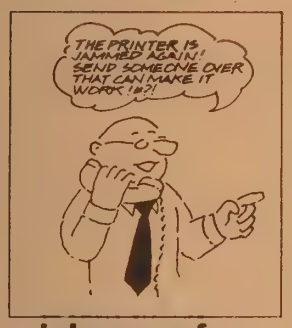

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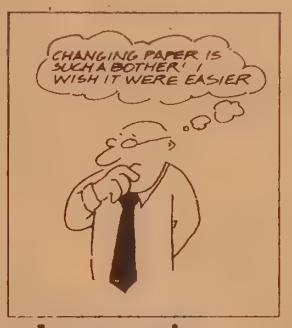

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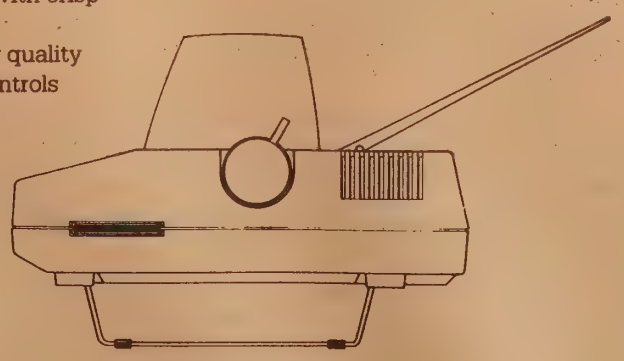

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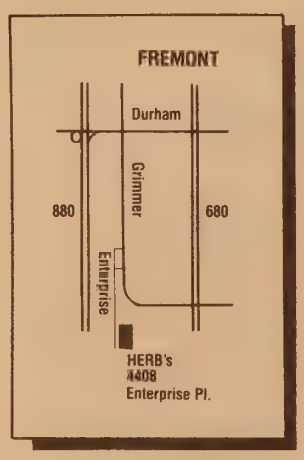

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How MicroTimes has reviewed other Personal Information Managers:

Info XL

I reviewed *Info XL* in the February 1988 *MicroTimes*. It was the first of the Personal Information Managers to reach the marketplace, and in many ways it is still unique.

Unlike *Agenda*, *Info XL* believes in multiwindow information management. It is centered around an outliner, but also on the screen are a note-taker, a monthly calendar, a database, "To-do today," and a search-window.

When you move in one window, the contents of the other window track with the window in which you are moving. If you move to a new item in the outline and it has a date, the monthly calendar moves to that month and highlights the date, and the "To-do" window shows what else is happening that day. If you move in the calendar window, the daily window tracks. Notes track with database items, and so forth.

Info XL is a very useful product for organizing a project. I used it to prepare a major negotiation. It suffers from a problem of too many "integrated" products, though—the components (like the note-taker and the database) are not as good as you can get in free-standing products. The integration, though, is excellent.

Info XL
$295
Valor Software
1700 Don Avenue
San Jose, CA 94124

IZE

Steve Guttman reviewed *IZE* in the August 1988 issue. He found a powerful text manager.

You can use *IZE* to organize text of any sort. One of *IZE*'s blessings is that you can keep a document in its native format—say, a *WordPerfect* manuscript—and use *IZE* to index it. If you want to edit the document further, *IZE* will load *WordPerfect* itself, let you work, and then be there when you exit *WordPerfect*. Even though you work in a non-*IZE* program, Steve reports that you are able to mark keywords for *IZE* to use. *IZE* provides its own word-processor, and you have the ability to import other files to *IZE* if you prefer.

You use keywords to define a document. Then *IZE* will handle the indexing for you. It will make an outline which shows frequency of the keywords in various documents to which it has access. The outlines give you a structured look at your textbase. Reviewers have repeatedly found *IZE* to be one of the best text-organizers.

IZE does not deal with dates, except as text. It is therefore not first choice to organize time-sensitive information.

IZE
$445
Persoft, Inc.
465 Science Drive
Madison, WI 53711
(608)273-8227

GrandView

GrandView is more than an outliner and less than a PIM, said our review in August, 1988.

As an addict of outliners, I very much appreciate the excellence of *GrandView*. It has excellent support for printers. It allows a wide variety of word-processing styles, and multiple outlines on the screen at once. I use it to do all my writing and to keep my daily lists.

GrandView's cross-referencing is very primitive. You can create a "category view," but the automatic assignment is, well, klutzy. The date management is also minimal, and *GrandView* will not compete with *Agenda* for any job where date-recognition is important. I am surprised that the people who brought the world the elegant *Q & A* database could not do better with dates and cross-referencing.

But as an outliner, *GrandView* is *the best*.

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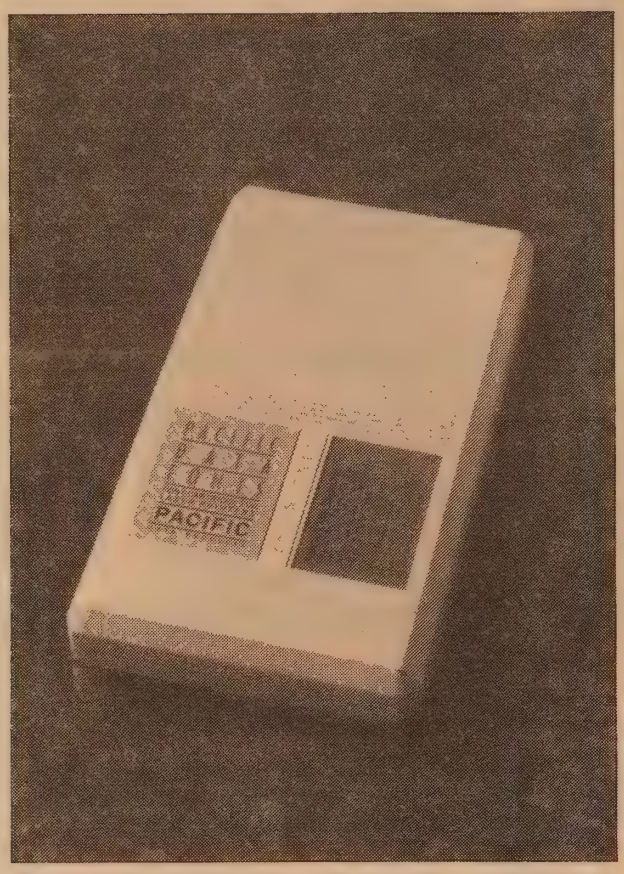

The 25 In One cartridge puts a large selection of fonts at your fingertips.

25 In One Font Cartridge

More Fonts And Flexibility For Your Printer

By Woody Liswood

If you own a H-P or Canon Laser Jet printer, don't purchase any font cartridges until you have checked out the Pacific Data Products 25 In One cartridge. It has almost all of the fonts currently available as separate cartridges—built into a single cartridge.

If you own or use a H-P LaserJet, you have probably bemoaned the cost of the extra cartridges you must purchase to get the type faces you want for your applications. Many of us who use the LaserJet feel that the Courier font built into the printer isn't the best-looking or most versatile font around. I normally use the Times Roman Proportional font when I print letters and only use the non-proportional Courier font if I am doing something with lots of numbers and tables. Since there are two cartridge slots with the LaserJet, I normally use a Times Roman "B" cartridge in one slot and the Presentation "R" cartridge in the other slot.

Now, in a single cartridge, I can access Helvetica, Times Roman, Courier, Prestige Elite, Letter Gothic, Line Printer, and Presentation fonts. The PC Line Drawing, Line Drawing, and Tax Line Drawing fonts are also included, as are the Times Math and Times Pi sets from the "K" cartridge. Point sizes range from 4.8 to 18. There is an AFS font in 4.8 specifically designed to print spreadsheets and be readable in these small sizes.

Pros And Cons

Is there an upside to acquiring this cartridge? Yes. For one price you get a multitude of fonts. You may not need any soft fonts to produce the text and graphics contained on the many separate cartridges. And all fonts have the USASCII, ROMAN 8, and ECMA symbol set. ECMA, if you don't know (I had to ask myself), is the European Computer Manufacturers' Association symbol set.

Is there a downside to this cartridge? Yes. Since there are so many possibilities, the standard control sequences will not work. You must be able to set up your printer driver so that it issues the correct control sequence to access the font you wish. The cartridge comes with drivers set up for *Lotus*, *MultiMate*, and *WordPerfect*. I downloaded a driver already made for *WordStar* 5.0 from the MicroPro forum on CompuServe. I also tested the cartridge with a beta version of a *Windows* driver which was supplied by Pacific Data Products. In all cases, the drivers worked. However, within *Windows*, you must still choose the two cartridges you wish to emulate. You don't have access to all of the potential of the 25 In One cartridge at once, and you can only access the font sizes that were on the original cartridges, even though the 25 In One cartridge has more sizes available. Tsk, Tsk.

One interesting thing happened with the *WordStar* driver. When I selected the Times Roman 10 point font, I got an 8 point printout. I had to select the Times Roman 12 point font to get a printout I liked. Turns out the 25 In One cartridge emulates the Z cartridge for Times Roman rather than the B cartridge which I had been using. Only a small change in my thinking and I was OK.

I was also somewhat peeved that although I could print more than 240 characters on a single line in landscape mode in *Lotus 1-2-3*, there was no way that I could get *1-2-3* to let me print more than the 240 character default. Looks like *Allways* is still the best solution to that problem.

Miscellaneous Features

I couldn't find any application in my library that used the Tax Line Drawing fonts, so I called Pacific Data Products to see who was using this capability. Kim Johnson, the Market Manager, said that programs such as *Turbo Tax* would make use of that cartridge. She sent me a sample file which printed out a number of the IRS forms using the cartridge. One of those forms is printed as an illustration to this article.

Ms. Johnson also said that Pacific Data Products is working on additional drivers for the cartridge, and that these drivers will be supplied as requested by purchasers of the cartridge. Also planned is a cartridge which contains even more fonts.

If you haven't purchased a font cartridge for your LaserJet printer, get this 25 In One cartridge and opt for convenience and the multitude of fonts. If you have already purchased a cartridge or two, you might want to sell them to someone who doesn't need to have everything at their fingertips, and then get the 25 In One cartridge for your personal use.

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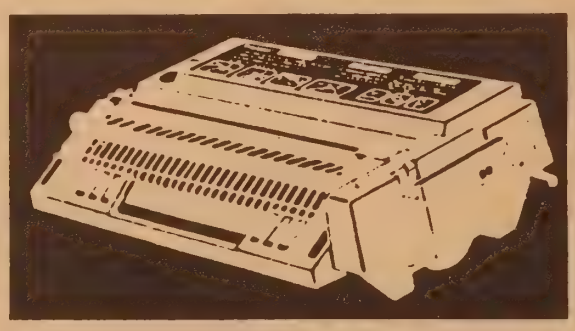

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This is Line Printer 17

This is Helvetica 14 Bold

This is Helvetica 6

This is Helvetica 8

This is Helvetica 10

This is Helvetica 12

This is Times Roman 8

This is Times Roman 10

This is Times Roman 12

This is Times Roman 14

This is Prestige Elite 17

This is Prestige Elite 12

THIS IS PRESENTATION 8

THIS IS PRESENTATION 6.5

This is Letter Gothic 14

This is Line Draw 14

This is Line Draw 10

T PC L D 14

This is the 25 In One Font test from within WordStar 5.0

The documentation for the cartridge says that there are fonts from 25 different cartridges, 103 fonts, 20 symbol sets, 13 type families and 11 sizes of type contained on the cartridge. I ran a test printout of all fonts. Yes, there are over 100 fonts, but there is an interesting way of counting. Each available font was printed three times—once for the USASCII symbol set, once for the Roman 8 symbol set, and once for the ECMA symbol set. That certainly narrowed down the font numbers somewhat. Ms. Johnson said that Pacific Data Products actually had about 87 fonts, but I count more like seven for word processing. Of course these fonts have regular, bold, italic, and portrait and landscape modes, and technically each of these modes could be counted as a separate font. The only things which might be missing are the special application fonts for barcode and OCR application.

The other illustration shows the variety of fonts and sizes which you can get with the 25 In One cartridge. Due to space limitations, I did not try to print each character in each set, but you can get a good idea of the set from the illustration.

There are two proportional spaced fonts: Times Roman and Helvetica. These are available in 6 to 14 point spacing. They specifically include the "Z" sizing. There are four fixed spaced fonts. They are Courier, Letter Gothic, Prestige Elite, and Line Printer. These fonts are contained in both Portrait and Landscape modes. If you do lots of legal work, there is a full set of legal characters included in the symbol set which can be accessed as typed characters. There is included the international character sets symbols for French, German, Italian, Spanish, Swedish, Finnish, Norwegian, and UK English languages, as well as Greek and Latin symbols mostly used in math and science applications.

Printers supported are the LJ 500, 500+, II, and 2000, the Olivetti PG-108, and the Canon LBP-II and LBP-8IIR. The documentation specifically says that the 25 In One cartridge is not compatible with the HP LaserJet Series One or the Canon PBP- 8A1.

The bottom line is that if you haven't yet purchased a font cartridge for your LaserJet printer, don't bother with the single font cartridge. Get this Pacific Data Products 25 In One cartridge and opt for convenience and the multitude of fonts. If you have already purchased a cartridge or two, you might want to sell them to someone who doesn't want, need, or care for having everything at their fingertips, and then get the 25 in one cartridge for your personal use. (Pacific Data Products, 6404 Nancy Ridge Drive, San Diego, CA 92121, 619/552-0880.) ■

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STEP 386/20	4.9	32.8	24.3		Deskpro 386/20	4.6	32.5	24.2
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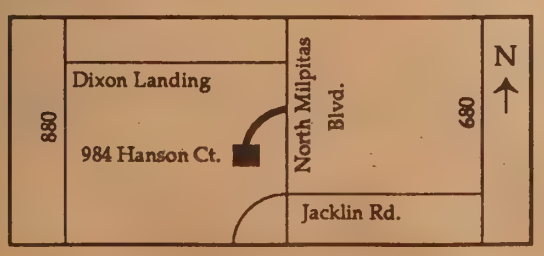

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Tax Preparation Software For Mac And PC:

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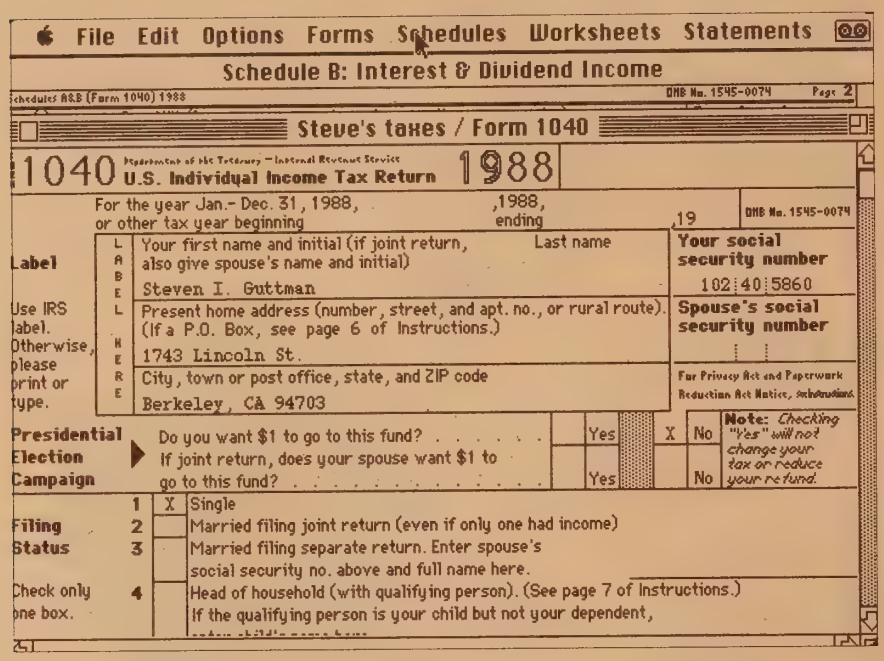
By Jennifer Farrell and Steve Guttman


File Edit Options Forms Schedules Worksheets Statements
Schedule B: Interest & Dividend Income
Steve's taxes / Form 1040
1040 U.S. Individual Income Tax Return 1988
For the year Jan.- Dec. 31, 1988, or other tax year beginning ,1988, ending ,19
OMB No. 1545-0074
Label
Use IRS label. Otherwise, please print or type.
Your first name and initial (if joint return, also give spouse's name and initial)
Steven I. Guttman
Last name
Your social security number
102 40 5860
Present home address (number, street, and apt. no., or rural route). (If a P.O. Box, see page 6 of Instructions.)
1743 Lincoln St.
Spouse's social security number
City, town or post office, state, and ZIP code
Berkeley, CA 94703
Presidential Election Campaign
Do you want $1 to go to this fund? Yes X No
If joint return, does your spouse want $1 to go to this fund? Yes No
Note: Checking "Yes" will not change your tax or reduce your refund.
Filing Status
1 X Single
2 Married filing joint return (even if only one had income)
3 Married filing separate return. Enter spouse's social security no. above and full name here.
4 Head of household (with qualifying person). (See page 7 of Instructions.)
If the qualifying person is your child but not your dependent,
Check only one box.

MacInTax lets you fill out your tax forms onscreen and print the result on either an ImageWriter or a LaserWriter

"Tax Simplification"—our nomination for oxymoron of the year.

The tax reform act of 1986 was widely touted as tax simplification because it reduced the number of income groups to three. Big deal! What they neglected to mention was that other changes in the law make it fiendishly difficult for ordinary mortals to even *contemplate* doing their own taxes. If you can't file 1040A or 1040EZ (the abbreviated tax forms), prepare yourself for some serious trauma. The W4 (withholding) form alone is enough to make the SATs look like nursery school entrance exams. And believe us, that is the least of your worries.

The tax code, which started as a 16-page set of instructions in 1913, has grown to over 36,000 pages of ambiguous, obtuse, difficult-to-read regulations. If your return is complicated by any weird adjustments or sources of income, in many cases you're better off consulting a tax accountant/preparer. Trying to figure it out yourself can put you in a coma, or at the very least, lower your IQ by about 30 points. This kind of stuff puts a gleam in the eyes of the Arthur Andersons and Arthur Youngs of this world—the tax reform act of 1986 is generating more revenue for tax accountants than the GNP of many small countries.

For many of us, the time has come to admit failure and seek professional help to prepare our tax returns. But for those stalwart souls who refuse to concede defeat, you might wonder what your options are. Two favorites—marrying a tax accountant, or retiring to a Himalayan monastery—may lack practicality for some of you. But if those options aren't appealing, and if you don't have the rest of your life to prepare for tax season, you might want to take a more rational tack and purchase a tax preparation software package. We reviewed three software programs—*TurboTax* and *TaxView* for the PC, and the ubiquitous *MacInTax* for the Macintosh.

Who Needs It?

While all these packages are good software, you should understand what they are and are not useful for before buying one of them. Conceptually, these programs are a kind of cross between *Excel* and *HyperCard*. Their spreadsheet qualities allow them to keep track of your dollar entries, add and subtract appropriate quantities and keep a running total of your tax liability. Their "hyper" abilities link appropriate tax forms together, organize and provide easy movement between forms, and give you context-sensitive help.

In most instances, it is truly easier to deal with forms on screen than completely spread over the floor of your study. However, for many people, this is the only advantage of a tax preparation program. If you can use 1040A or 1040EZ, you probably will not be able to justify the expense of this software. The short forms really don't take much time to fill out. Similarly, even if you have to file the long-form 1040—if you have a good handle on all your deductions and your W-2 forms are all at hand, these programs may not offer you a significant advantage.

Tax preparation programs are really for people who want a way of getting at the forms quickly and easily, who have a pretty good idea of how the various tax entities work together, and who want to be able to make changes to their returns during preparation.

Furthermore, if you honestly don't understand how the tax code treats your particular income, credits, and deductions (and you have no interest in knowing), these programs may not be worthwhile. They don't teach the code, they just help you prepare your returns.

Tax preparation programs are really for people who want a way of getting at the forms quickly and easily, who have a pretty good idea of how the various tax entities work together, and who want to be able to make changes to their returns during preparation.

MacInTax

MacInTax is the *grande dame* of tax

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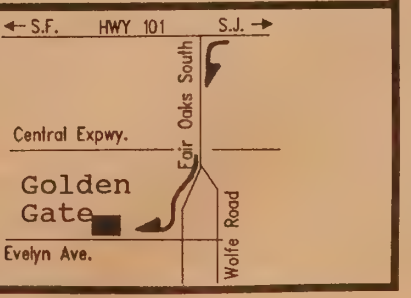


preparation software for the Macintosh; it basically owns the Mac tax software market. It doesn't have a lot of frills, but what it does it does simply, elegantly and easily. *MacInTax* faithfully reproduces the federal tax forms on screen (in the glorious Geneva font), provides links between forms, and organizes the tax preparation process.

MacInTax deals with four types of tax documents—forms, schedules, worksheets, and statements. The "Forms" and "Schedules" menus give access to standard IRS forms and schedules; "Worksheets" are IRS forms which contain supporting figures for a form or schedule; and "Statements" are supplementary supporting forms, provided by *MacInTax*, which are attached to your return.

In the Macintosh style, *MacInTax* lets you keep any number of different forms open on screen. This makes it easy to switch from form to form. Incomplete forms are listed in an outline font on the menus, and names of completed forms are underlined. Preparing your taxes is straightforward: simply complete the tax forms on-screen as you would on paper. *MacInTax* automatically fills in values which would be entered on multiple lines, and makes calculations and comparisons where appropriate.

One nice feature is the ability to mark uncompleted lines or estimated values by appending a "**?**" or "**e**" to your entries. This lets you enter preliminary numbers without running the risk of accidentally forgetting that those numbers were estimates. You can easily find question-marked or estimated items within a form by hitting **shift-option**.

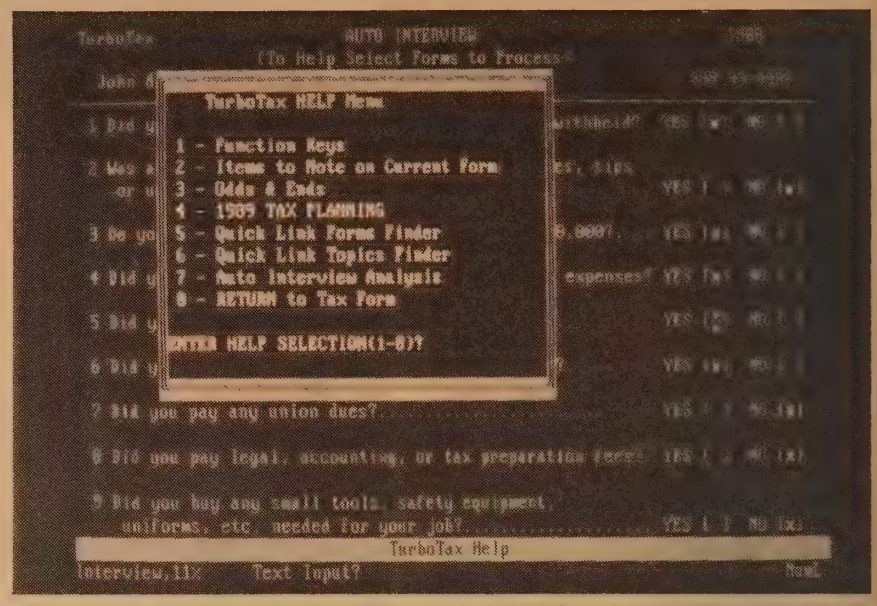
Another nifty feature is the ability to create an "itemization" of an entry. Say, for example, you have more charitable contributions than can be listed on Schedule A, line 14. By double-clicking in the value field, you can open up a window in which more deductions may be entered. *MacInTax* sums these deductions and inserts the total at the appropriate location in the form.

MacInTax always calculates in the background, so you don't have to hit a special calculation key to get numbers to flow through the forms. It also provides the IRS's tax instructions online, conveniently accessed by double-clicking on the text portion of a line. Both ImageWriter and LaserWriter output forms are acceptable to the IRS.

TurboTax

TurboTax is a feature-filled program from ChipSoft of San Diego. A winner of accolades from both *PC Magazine* and *PC World*, it's been a hot mover at a lot of local software outlets. We know several people who swear by it.

One of the nicest facets of this program is the thought ChipSoft put into preparing you to fill out your tax forms. For example, the program contains an "auto-interview" feature, consisting of 53 questions which help identify the forms you'll need to complete your return. The program keeps this list of forms available for easy access in a pop-up window. *TurboTax* also has a Depreciation and Amortization Worksheet to catalog your depreciable assets and transfer


TurboTax HELP Menu
1 - Function Keys
2 - Items to Note on Current Form
3 - Odds & Ends
4 - 1989 TAX PLANNING
5 - Quick Link Forms Finder
6 - Quick Link Topics Finder
7 - Auto Interview Analysis
8 - RETURN to Tax Form
ENTER HELP SELECTION(1-8)?
TurboTax Help

TurboTax offers a wide range of online help in planning and preparing your taxes

Things to Watch Out For While Preparing Your Tax Return

A friend of ours who prepared his own 1987 tax return told us he was a little disillusioned when he found a notice in his mail box from the IRS claiming he owed more tax because he was subject to AMT. After paying penalties and interest he responded: "What the hell is AMT?"

AMT: The Alternative Minimum Tax is a tax in addition to regular income tax which Congress created to ensure that taxpayers with very high incomes (including corporations) who were claiming lots of legitimate deductions paid some minimum amount of tax. To be safe, all taxpayers except those filing 1040EZ or 1040A should fill out form 6251, and especially those people who have the following types of income and deductions:

Income

Incentive stock options, exercised during 1988; Interest on post August 7, 1986 private activity bonds;

Schedule A Deductions

Medical expenses in excess of 7.5% of AGI (Adjusted Gross Income); Miscellaneous itemized expenses in excess of 2% of AGI; Contributions of appreciated property;

Other Deductions

Schedule C or E accelerated depreciation expense Schedule E passive activity losses which were allowed.

After completing the form, taxpayers should read the instructions for 6251 under the subheading "Who Must File" to find out if they need to include this form with their 1040.

Capital Gains and Losses: Taxpayers who had capital losses in excess of $3000 in 1987 should include the excess in their 1988 tax return. Congress says we can offset any capital gains earned this year with losses we were not allowed to use in prior years.

Interest Deductions: All together there are six different types of interest. Some are fully deductible, some are partially deductible, and some are nondeductible. For most people home mortgage interest is still fully deductible. Consumer interest, i.e., interest on your credit cards and your car loans, is only 40% deductible in 1988. And interest on a loan for which the proceeds were used to purchase tax-exempt municipal bonds is nondeductible.

Home mortgage interest on two residences is fully deductible on Schedule A unless total acquisition debt exceeds $1 million (for mortgages taken out after October 13, 1987). Points paid on refinancing must be spread out over the life of the loan. Taxpayers with more than two places of residence each year must designate a principal residence and secondary residence. Mortgage interest on any other home is not deductible on Schedule A, but depending on how the residence is used it may be deductible on Schedule E.

Passive Activities: Just like capital losses, passive losses are limited; the disallowed passive loss can be carried forward to offset passive income in the future. But unlike capital losses, which are limited to $3,000, passive losses are limited to 40% of their total for 1988.

Home Office: To deduct expenses related to the business use of your home, the expenses must be attributable to a portion of the home used exclusively and on a regular basis for the conduct of your trade or business. A deduction is not allowed for space which is used for business and personal reasons, except in a few cases. Anyone trying to offset their business income with a portion of their home mortgage should consult their tax accountant or another source of technical assistance before filing their tax return.

Those preparing their own tax return know it can be an arduous task. Tax preparation software packages take the drudgery out of the process. Nevertheless, it is important to remember that the final product, the tax return, will only be complete and accurate if the information input into the package is complete and accurate. We hope this short list of common tax issues will point those people willing to take a shot at it, in the right direction.

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the appropriate information to your tax forms. To add an asset and calculate the appropriate depreciation expense, *TurboTax* asks you a series of questions about the nature of the asset and type of depreciation you want to use. While you must still understand how each asset fits into the overall picture of your profitability (or lack thereof), this really helps eliminate the busywork.

Like many PC programs involving calculations, *TurboTax* tries to emulate *Lotus 1-2-3*, at least as far as function key assignments go—**F1** is help, **F2** is edit, **F9** is calculate. The user interface, while not necessarily intuitive, is commonsensical and well designed. We particularly like the status line which identifies the kind of entry that the cursor is positioned on. It tells you, for example, whether the program is looking for text or value data, whether these values are protected, and whether the entry can be expanded. An expanded entry links to a pop-up window and, like *MacInTax's* itemizations, attaches additional information to a line.

As you might guess, the backslash ("\") key accesses the main menu, which contains a plethora of options, including a pop-up calculator and notepad. Some of the program's highlights are:

The Form Selection Menu. The **F6** key pops up a window with a list of all the IRS forms and schedules (forms which are partially completed are highlighted). The form of interest can be accessed by picking it from the menu.

The Quick Link Forms Finder. This option pops up two windows, one displaying a scrolling list of 500 topics, and the other which shows the forms associated with the highlighted topic. You can jump to any given form by highlighting its name and hitting ENTER.

The Quick Link Topics Finder. This is the converse of the Forms Finder, displaying a list of forms in one window, and the topics that are associated with the highlighted form in another.

The Tax Window. This beauty displays the status of your return at any point during preparation, showing your income, tax liability, and refund.

Data Examiner. This is an auditing feature which scans your return and provides messages on any missing fields and values.

Tax Planning. *TurboTax* also has a "plan mode" to help you anticipate your 1989 tax liability and adjust your strategy accordingly. When in "plan mode" *TurboTax* uses the 1989 tax tables.

TurboTax can be run in either graphics or text mode, where the graphics mode screens emulate the look of the actual IRS tax forms. While the screen doesn't look as slick as *MacInTax*'s, it's still realistic enough to strike fear into your heart.

While you can fill out *TurboTax*'s forms in any order, you're probably best off starting with 1040, and branching to the supporting schedules as their entry lines are encountered. You can jump to a supporting form easily by hitting the **F5** hot-key when the cursor is positioned on the associated line on 1040. You can also access the IRS's instructions by choosing **instruct** from the utility menu (it would be nice if there were a hot-key for this).

One of our few complaints about the program—and we probably shouldn't even call this a complaint—is that it almost has *too many* features. You get the feeling that ChipSoft compiled a list of suggested features from their users and then added *every single one* of them to the program. The options and capabilities of the program are almost overwhelming. However, every feature serves a useful purpose, and most are well designed and implemented. Our only warning is that you should make sure you don't spend more time playing with the program than you would preparing your taxes by hand.

TaxView

Softview's *TaxView* is essentially a port of the company's Macintosh product to the Microsoft *Windows* operating environment. *TaxView* is designed to be used on an AT-class machine or faster—the program comes on five 1.2 Mb floppies and, as is traditional with *Windows* software, can be installed either as a standalone program or as a *Windows* application. As such, it shares the benefits and pitfalls of *Windows*—outstanding graphics, but a long, involved installation procedure (especially for the standalone version).

The workings of the programs are essentially identical to *MacInTax*, with function-key assignments substituted for Macintosh option-key combinations. One really nice addition is the inclusion of downloadable fonts for the HP LaserJet—for printing the tax forms. And for your nighttime reading pleasure, both *TaxView* and *MacInTax* come with a copy of Arthur Young's *Federal Tax Highlights*.

And So It Goes

Once again, we must emphasize that these programs are not a substitute for an understanding of the tax laws. If you needed a tax accountant before you bought the program, chances are that you will still need one afterwards. However, a tax preparation program can save you hours of wallowing through instructions and searching for mislaid forms. In addition, they are very good vehicles for consolidating your tax information, and helping to understand where your tax liabilities are coming from. For their modest prices, these programs will be a worthwhile investment for many people. They will all take you from Schedule A to Worksheet Z in relative style.

TurboTax's awesome features definitely set it above *TaxView* and *MacInTax* in terms of raw abilities. It will probably be the choice of those who like doing a lot of planning and scenario analyses. But features aren't the only issue. Another consideration is ergonomics. Choose a program that has a "look and feel" that you are comfortable with. If you're happy in the character-based world of the PC, and automatically look for the "\" key on your computer, *TurboTax* will definitely show you a good time. If you think MS *Windows* is "The Soul of the New Machines," and you own a '286 or better, you may prefer *TaxView*. And devoted Macintosh users won't go wrong with *MacInTax*. Its well designed features and consistent interface make it a good choice for Apple enthusiasts. ■

A tax preparation program can save you hours of wallowing through instructions and searching for mislaid forms. In addition, they are very good vehicles for consolidating your tax information, and helping to understand where your tax liabilities are coming from.

RESOURCES

TurboTax by ChipSoft, Inc.
5045 Shoreham Place
San Diego, CA 92122
(619)453-8722
Retail Price - $75.00

MacInTax and *Taxview* by SoftView, Inc.
4820 Adohr Lane, Suite F
Camarillo, CA 93010
(805)388-2626
Retail Price $119.00 (*MacInTax*) and $119.00 (*TaxView*)

Jennifer Farrell is a tax associate at Price Waterhouse in San Francisco. Steve Guttman is a computer and marketing consultant in Berkeley.

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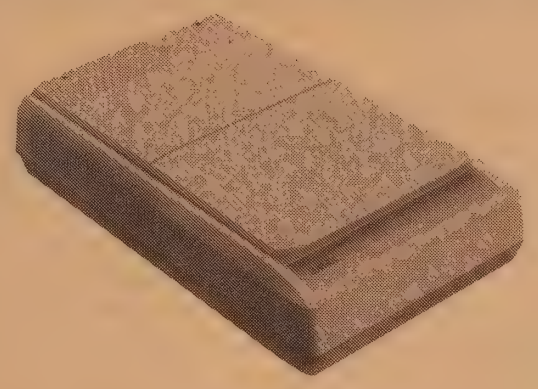

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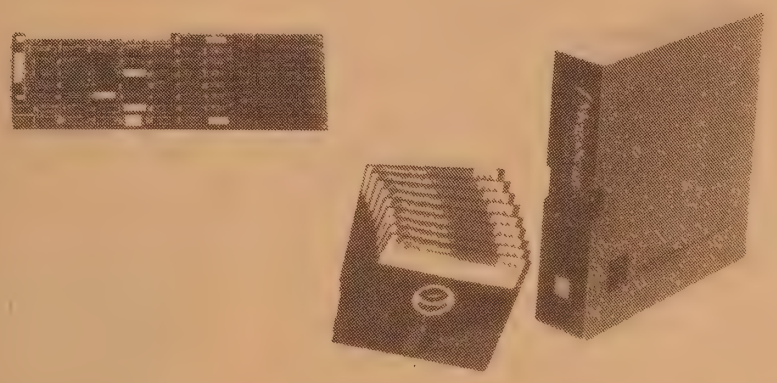

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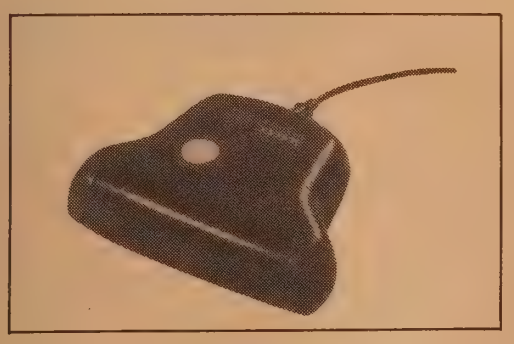

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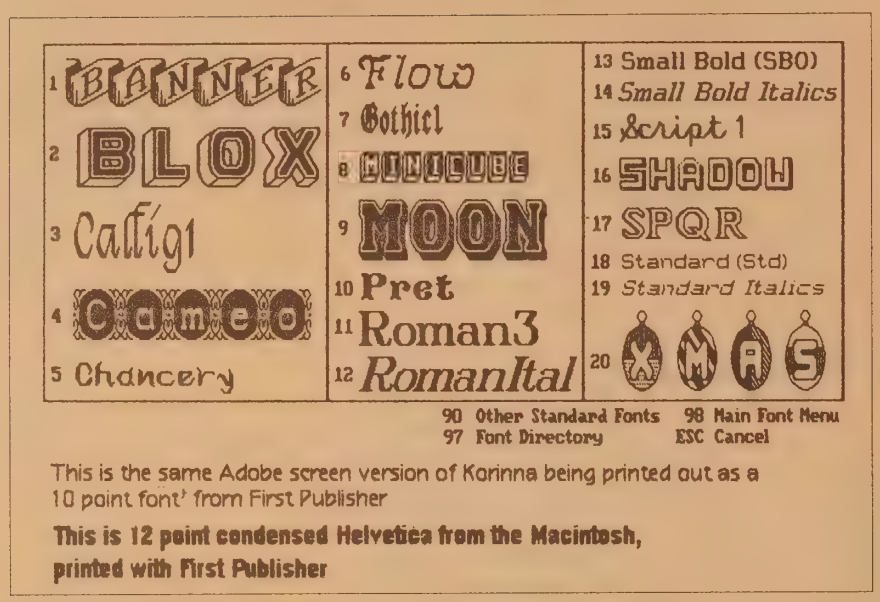
Fontasy And First Publisher

Desktop Publishing For The Clone User On A Budget

By Lenny Bailes



Some of the fonts available with Fontasy.

Somewhere in the City, a restaurant owner is eying his $500 XT Clone dubiously and wondering whether *Lotus 1-2-3* can do wine menus. If he reads slick computer magazines, he knows that a bare-bones starter system for desktop publishing will cost at least $3,000—if he can get a good deal on a laser printer.

All is not lost. With his existing equipment and a dot-matrix printer, the beleaguered host can use one or both of two low-cost software packages to produce attractive pages with mixed text and graphics.

Fontasy and *First Publisher* are low-cost page-composition programs which run on XT clones and work with 9-pin or 24-pin printers. They create pages which can mix multi-column text and graphics with a variety of attractive borders. They both also produce files which can be taken to the neighborhood copy shop and laser-printed, resulting in output indistinguishable from copy produced by the PC giants, *PageMaker* and *Ventura Publisher*. (It's true that you shouldn't attempt to publish large technical manuals or magazine-quality ad copy with *Fontasy* or *First Publisher*, but a restaurant menu or a small newsletter is easy!)

Fontasy

As a user of *Fontasy*, you have a tool like a Swiss Army knife at your disposal. Open it at one end, and you can learn command-driven layout techniques similar to those used on minis and mainframes. Open at the other, and it's a mouse-driven graphics editor. I use *Fontasy* to edit H-P soft fonts, create headings for other DTP software, and to clean up bit-mapped images. *Fontasy*'s method for manipulating graphic blocks has always been easier for me to use than any other PC application. The new release adds the ability to view a full bit-mapped page on the screen and edit it directly. If you can't remember two-letter commands, all the editing can be done from pop-up menus.

The idea behind *Fontasy* is to allow you complete pixel-by-pixel control of the image on your screen, then duplicate the bit-map on your printer. You can type text in letter by letter, change fonts at will, reposition the cursor anywhere on the page accurately, and return to exactly the same column or row of pixels that you left.

Fontasy's new fat-bit feature is remarkable. The mouse is programmed to change sensitivity dynamically so that the cursor won't overrun on the screen when you add or delete pixels. It's easy on your wrist and on your nerves.

The cursor also toggles into a drawing tool which produces lines, circles, and rectangles in varying thicknesses. Another toggle makes the cursor a block-marking tool. Unlike other paint programs, *Fontasy* can continue to show the block dynamically as you shrink, enlarge, or move it around on the page. You can create interesting XOR effects, and make hollow and shaded fonts by staggering copies of the same block one or two pixels apart. *Fontasy* includes a variety of decorative borders, clip art and fonts in the package. A catalog which displays the output of additional art and font disks is also included.

Previous versions of *Fontasy* have combined the sign and card-making capabilities of *Print Shop* and *Print Master* with *the* original newsletter publishing system for the PC. (Software vendors were printing shareware catalogs with *Fontasy* when *PageMaker* was just a gleam in Aldus's eye). The new *Fontasy* pours text and graphics into multi-column templates two to three times faster than previous versions. Now, you can read text onto the graphics screen and automatically have pages saved to disk while text flow continues. You can also pause and work on the layout one page at a time.

Fontasy is different from "desktop publishing" software (including *First Publisher*). It can't automatically wrap and reformat text after the text has been read onto the screen. Instead, *Fontasy* provides you with its own word processor which works in character mode. *Fontasy*'s word processor (called FED) is equipped with standard features and uses an internal graphics formatting menu. The format menu inserts two-letter dot commands into the text for font changes, graphics placement, line and box drawing, borders, bold type, adjusting line height, character width, kerning, etc. Dot commands can be generated from the menu, or typed in directly. The improvement of *Fontasy* v.3 over last year's *Fontasy Publisher* is that you can now swiftly toggle back and forth between the bit-map screen and the editor. If you want to change something, you can move parts of the screen around as graphic blocks, or go back to the editor and rewrite the text file. The editor repours the text back to the graphics screen fairly quickly. (*Fontasy Publisher* was an upgrade of *Fontasy* v.2. It was offered to registered users only. *Fontasy* v.3 is considered by ProSoft to be a new product, containing improvements on features which were tested in the limited upgrade. Owners of any version of *Fontasy* should send in registration cards, as this will entitle them to special upgrade offers and add-on products at a considerable discount.)

Fontasy has full color support on EGA and VGA systems.

First Publisher

First Publisher v.2 is a more widely

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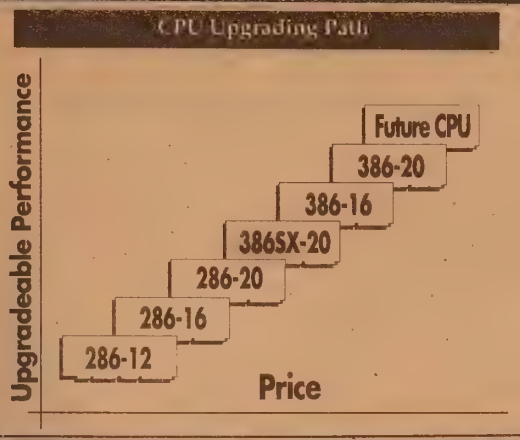

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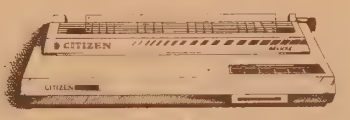

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recognized program than *Fontasy* for "low-end" desktop publishing. "Low-end" usually means an absence of speed, no fine control over layout, and an inability to handle large publications. For simplicity and ease of use, *First Publisher* is a champ. Someone familiar with *MacWrite* on the Macintosh would adapt to its use within 10 minutes. *First Publisher* is not going to automatically generate footnotes, or handle complicated paragraph styles, but it will allow you to produce small newsletters and signs with a minimal investment of learning time.

Upgrades in version 2 include the ability to read formatted text from several popular word processors, including MS *Word* v.3, *MultiMate*, *WordPerfect* (to 4.2) and *WordStar*. ("Formatted text" usually means that bold, underline, and tab settings are preserved in the transfer.)

Graphic images can be imported from *PC Paint+*, *PC Paintbrush*, *Publisher's Paintbrush*, *MacPaint*, *LogiPaint*, and MS *Windows Paint*. Screens can be captured from other applications. The mouse-accessible, pull-down menus have been revised to include on-line help, insertion/deletion of pages, and an adjustable snap-to grid for graphic alignment.

Printer support has been upgraded for H-P DeskJet/LaserJet family and Apple LaserWriter, as well as for dot matrix printers. Problems with Epson compatible printers in version 1 have been remedied by creating more printer drivers.

First Publisher's approach to layout is to handle artwork and text in two different screen layers. Placement of text is controlled line by line by individual guides called baselines. (In *Ventura Publisher* and *PageMaker* text is handled in blocks called frames or rectangles). Baselines can be adjusted individually or in columns to create text formatting effects in *First Publisher*. Artwork is controlled separately, since it exists on a different (purely pixel-oriented) screen layer. You also have the option of using the bit-map screen layer to type in "bit-mapped text," which is treated as a graphic element (can't be reformatted, won't word wrap, but can be scaled or cropped).

First Publisher's other graphics tools are similar to *Fontasy*'s. Whereas *Fontasy* selects its tools from hierarchical pop-up menus or function keys, *First Publisher*'s are available by clicking on a series of icons at the side of the screen. *First Publisher* doesn't offer *Fontasy*'s depth in drawing and block manipulation, but its tools are intuitive and easily accessed by clicking the mouse. It's possible to do graphic editing with the cursor keys instead, but this is awkward.

For users of Tandy computers, SPC also offers a small upgrade of *First Publisher* which runs under Tandy's Deskmate interface. The only new features are color support for EGA and VGA monitors, support for the Tandy laser printer, LP-1000, and the ability to change printers on the fly, instead of having to exit the program and reconfigure it.

Comparisons

In general, *Fontasy*'s output on dot matrix printers is superior to *First Publisher*'s. The fonts included with *First Publisher* do not look as well-balanced in small sizes. You may prefer your 9-pin printer's built-in NLQ font for body text to anything supplied with the program. Luckily, this version of *First Publisher* allows you to select that option. The large fonts look nice. You can create headings in large exotic fonts, place graphic images, and use your printer's built-in NLQ font for body text.

Fontasy allows special quadruple density printing with Epson FX-compatible printers. At 240 x 144 dpi, *Fontasy*'s smaller fonts achieve a more pleasing appearance.

If you have access to a laser printer, the situation changes somewhat. Because *Fontasy* attempts to do a literal reproduction of a bit-mapped screen, it can only print 1/2 to 3/4 of a full page at 300 dpi on a LaserJet+ or LaserJetII, unless you have expanded memory or a JLASER card installed in your system. *First Publisher* includes support for downloadable H-P soft fonts, and can produce a full page within 640 K. *First Publisher* also supports the Apple LaserWriter, whereas *Fontasy* does not. Both programs support the H-P DeskJet. There are large libraries of additional fonts available for both programs at compatible prices.

It took me a little bit longer to compose the wine menu in *Fontasy* because I did it on the screen and had to manually adjust the cursor while changing fonts on the same line. I did feel that *Fontasy* gave me more control over the final image, but I had to pay more attention to what I was doing.

Overall, *First Publisher*'s clip art is more attractive than *Fontasy*'s. Most of the *First Publisher* art library is simply ported over from the original T/Maker disks compiled for *ClickArt* on the Macintosh. It should be pointed out, however, that there are many conversion utilities available on bulletin board systems and from shareware vendors which will convert *First Publisher*'s MacPaint format to BASIC BLOAD files, which *Fontasy* can use. *PC Paintbrush* files can be similarly converted, and ProSoft markets a TIFF conversion utility for exchanging scanned artwork with *PageMaker*.

On *First Publisher*'s graphics screen you can't use the tab key, and

Wine lists prepared on Fontasy (dancers) and First Publisher (wine glass), printed on an Epson LX-80.

PAGE LAYOUT TERMINOLOGY

First Publisher includes built-in word processing functions for text editing directly on the graphics screen. *Fontasy* uses a separate text editor which embeds page format commands into a file and pours the result into a bit-map display. Both programs permit control of basic page layout features in addition to margins, page length, and multiple text columns:

Leading: The extra space included or subtracted between lines of text to improve the appearance of a page.

Kerning: Changing the space between certain letter combinations to make words look smoother.

Text Wrap/Auto Flow: The ability of software to read text from a file and fit it around a previously placed graphic image in a pleasant way.

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with *Fontasy* underlining must be done manually. For longer publications, text should be read into either program from a pretyped file. (In *Fontasy*, italics should be substituted for underlining).

What Only Hackers Will Tell You

Since *First Publisher* is actually a ported and upgraded version of a Macintosh application, the fonts it uses are actually almost identical to the Macintosh fonts used by *MacWrite* and *MacPaint*. These fonts can be moved from the Macintosh environment to the PC via TOPS and installed in *First Publisher* with the use of its Fontmove utility.

1.Use the Macintosh DA/Font mover to pack the fonts you want into a suitcase file.

2. Use Mainstay's utility, *Binhex*, to convert the suitcase file into a binary file on the Mac.

3. Transfer the binary file to the PC via TOPS or modem. (Use MacBinary XMODEM, if possible).

4. One byte in the file header has to be changed for *First Publisher*'s Fontmove utility to read the Macintosh fonts. A public domain utility called *Maclip* is available on many BBS systems to read in the .BIN file from the Mac and fix the file header. (Sometimes *Maclip* is listed under the name PUBUTILS.ARC).

5. Use *First Publisher*'s Fontmove to copy the various Macintosh fonts into a new font file. Check to see that the name of the font does not occupy more than 15 characters, or it will not fit correctly on *First Publisher*'s font menu. For fonts with longer names, either shorten the name over on the Mac side, or use the Fontmove utility available with *First Publisher* release 1, or *Click Art*, if you have it. The older Fontmove utility allows you to edit font names. This was dropped from *First Publisher* 2 in the interest of simplicity. Software Publishing Company has informed me that they will send the old Fontmove utility to any registered customer who calls them and requests it from them.

Prosoft sells some very useful add-on utilities for *Fontasy*. One is a font editor, and another a conversion utility which moves fonts back and forth between *Fontasy* and the H-P soft font format. *Fontasy*'s font editor comes with a utility which can capture user-designed icons off the screen and make new fonts of your choosing. This is a laborious process, as each individual letter has to be saved separately before the font is compiled, but it works. The conversion utility allows hundreds of interesting display fonts which Prosoft sells to be converted to H-P format for use with word processors or other DTP software. (A utility to construct printer drivers for Microsoft *Word* is included.) You can edit your pre-existing library of H-P soft fonts by converting them for the font editor. (The font editor is limited to a character cell height of 48 pixels, so it can't handle very large soft fonts.)

Summary

First Publisher is easy to use, it lets you get simple jobs done in a hurry, and it's useful as a half-way station for processing output from the Macintosh.

Fontasy is a graphics tool for controlling and editing the PC bit-map screen. The built-in command language allows dedicated users to configure their own menus for custom features. I think this might be a great way to give a budding high school hacker some experience in designing PC interfaces. English majors might learn how to bypass the dishwasher phase completely and become consultants. ■

RESOURCES:

Fontasy, v.3, $129.95
ProSoft
Box 560
N. Hollywood, CA 91603
(818)765-4444

First Publisher, v.2 ,$129.95, Deskmate version $149.95 ($45 upgrade from 2.0)
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Maclip (PUBUTILS.ARC) is a public domain utility by T.E. Doyle which will convert Macintosh screen fonts to First Publisher format.

Iconvert (ICON110D.ARC and Optiks (OKF212.ARC) are two shareware programs available on BBS systems which will convert artwork for Fontasy and First Publisher. (It's a good practice with shareware to contact the author before registering, and use a credit card for payment. There has been reported difficulty in contacting the author of Iconvert, though it's a great program.)

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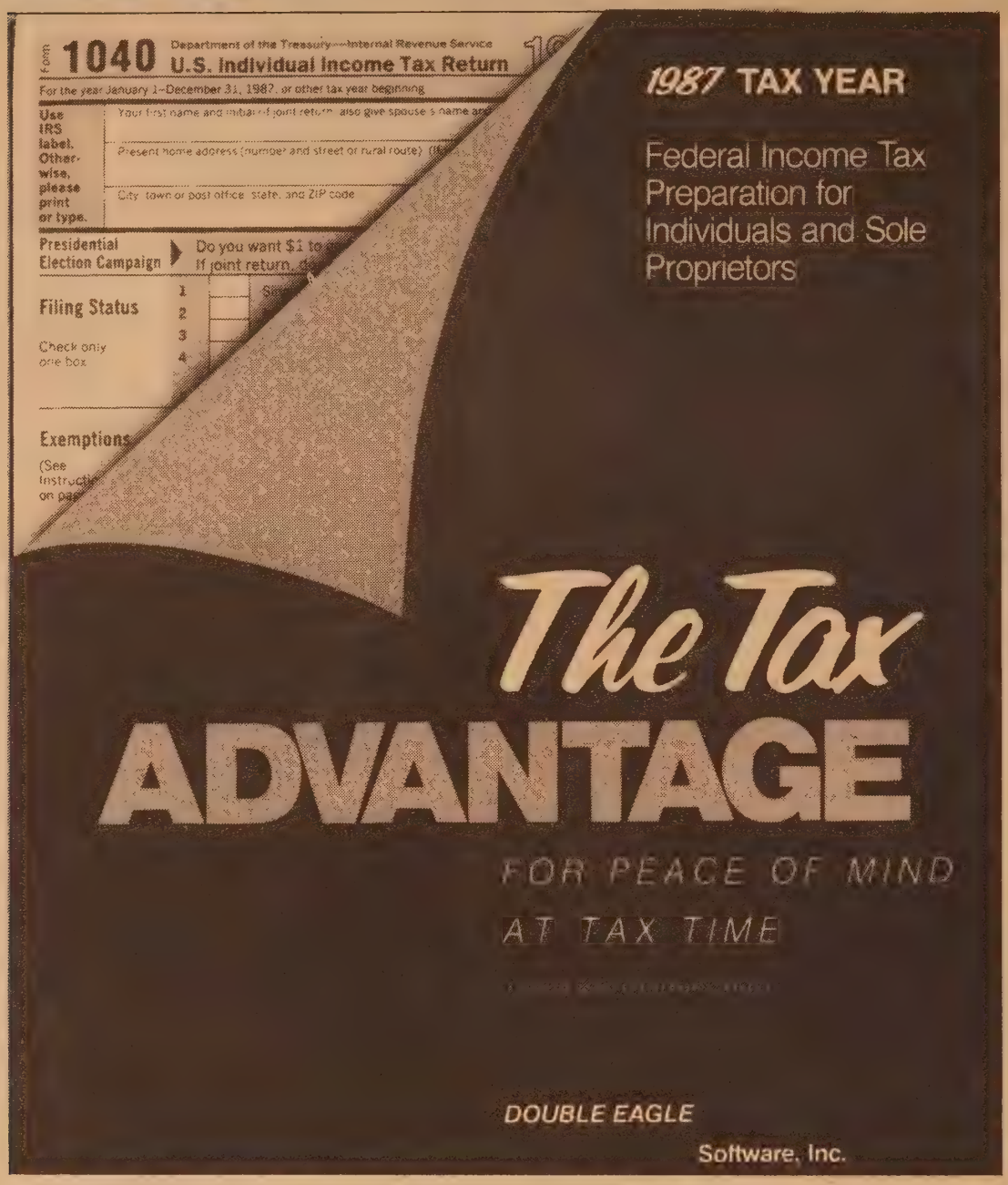
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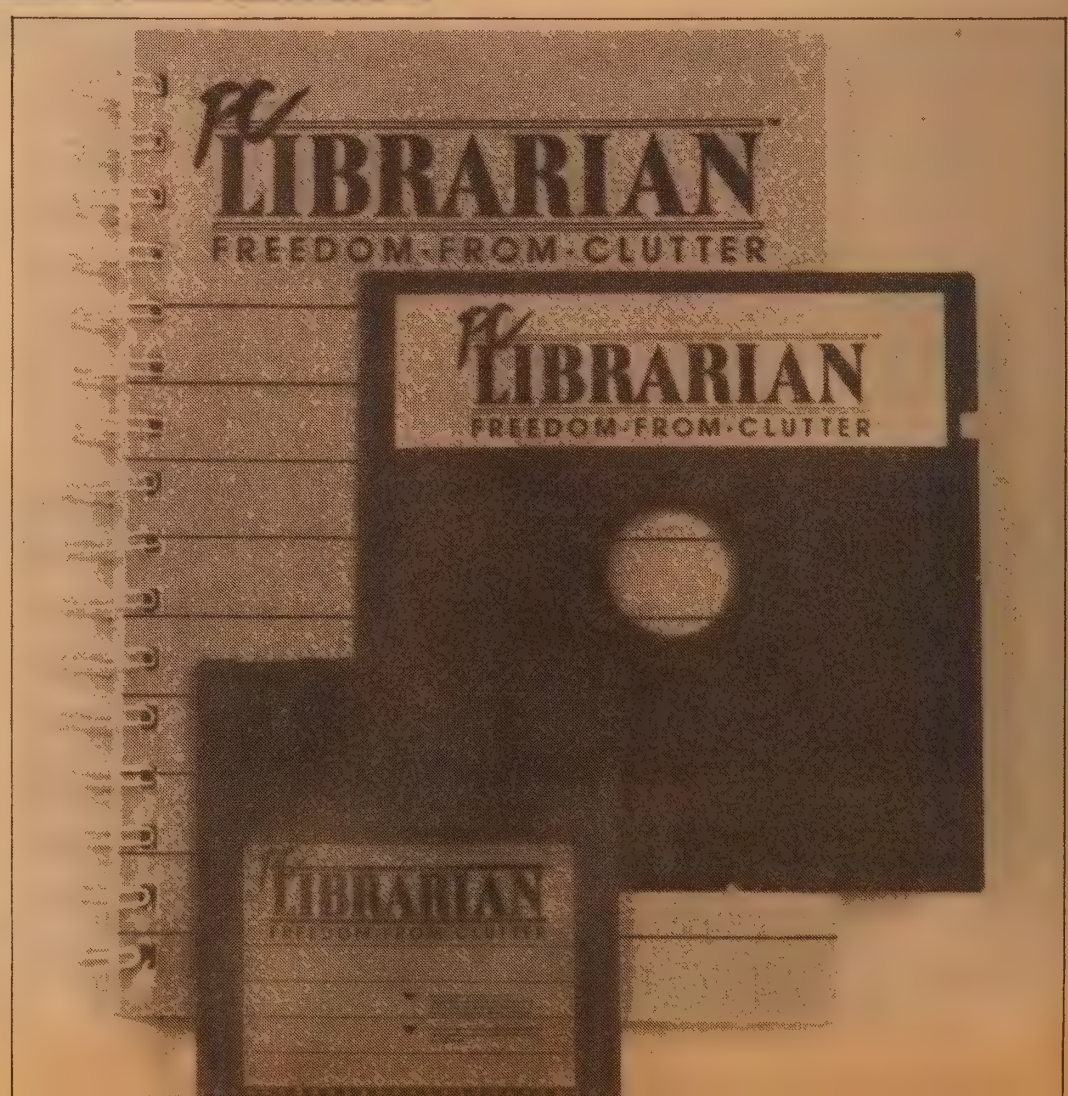

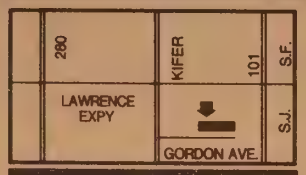

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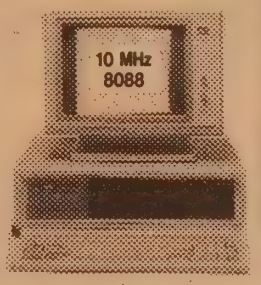

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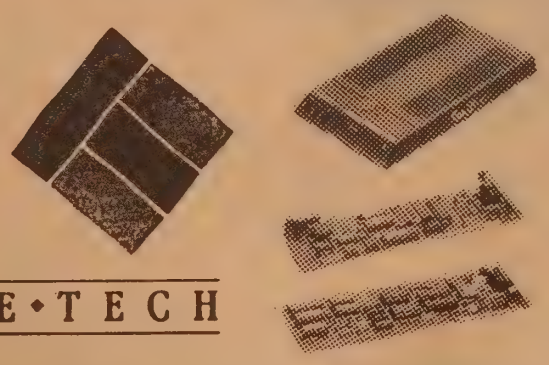

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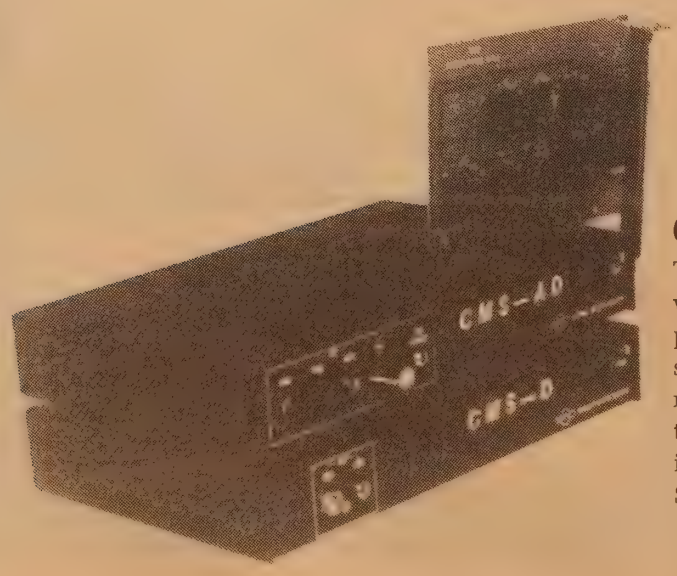

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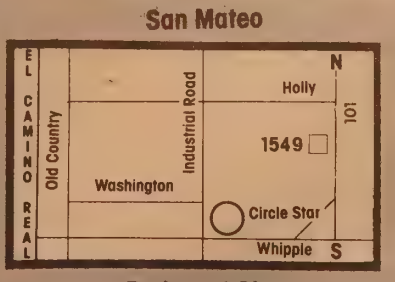

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CD-ROM*continued from page 90*
about a year and a half from the announcement date.

DVI

The last child of CD-ROM, DVI, is not a direct descendant, and may even be separating itself from its adopted family to pursue bigger and better things.

DVI is not a CD-derived storage technology, but a compression technology developed at the David Sarnoff Research Center, owned at the time by RCA. Compression allows more data to be stored in less space; there are many approaches to compression, some of which sacrifice part of the information, for example by enlarging storage capacity to store more pictures, but at a lower resolution. Other compression techniques sacrifice none of the information, but re-encode it in a more efficient manner. DVI does a little of both through a very powerful encoding scheme, which comprises one part of its technology.

Video compressed in accord with the DVI encoding scheme, typically on a Digital Equipment VAX, can be decompressed and displayed in real time on an IBM-AT through two proprietary chips which form the other part of DVI. As a result, one whole hour of full motion color video can be stored on a CD-ROM, though in somewhat reduced resolution and with a barely perceptible loss of pixels, especially in scenes featuring rapidly moving objects.

Because it enables such an increase in storage capacity, DVI, which is applicable in other areas besides CD-ROM, such as telecommunications or magnetic mass storage, has been hailed by some observers as the technology which will let CD-ROM outshine CD-I. While CD-I offers full motion color video within a window at most one ninth the size of a full display, a DVI-encoded CD-ROM could offer very elaborate interactive video programs. Of course, there is no technical reason why DVI could not be used on a CD-I disk as well, but for business reasons that is extremely unlikely at this juncture. DVI could, however, become the eventual XA standard for video.

In October 1988, Intel announced that it had acquired DVI from GE. Intel describes DVI as a superset of CD-ROM (XA), so the two will be compatible. They will both exist in the MS-DOS universe. In fact, DVI applications now in development for release starting in 1989 are all based on CD-ROM disks as the delivery medium.

Eventually, Intel hopes that DVI will become the universal standard for multimedia development, storage, processing, and display on personal computers. In pursuit of this strategic goal, Intel will initially manufacture the two DVI chips developed by RCA for decompression and display of video. These chips are used to play back DVI disks.

DVI is also, however, a development environment, and Intel will initially offer DVI to developers as four boards which convert an IBM-AT into a DVI workstation. At the same time, Intel will redesign the board set, reducing it from four to two boards, which will probably be announced during the first half of 1989. Finally, Intel will turn the two boards into a chip set suitable to embed in a personal computer motherboard, with an availability target date of early 1990. At that point, Intel hopes, DVI will become a standard for processing real-time video, audio, graphics, and other multimedia data types in PCs. Needless to say, while neither Intel nor IBM are preannouncing any specific product plans that the latter may have, it is not unlikely that if Intel favors DVI, IBM does too.

Conclusion

Some of CD-ROM's children are closer to maturity than others. For even the most mature of them, the market is still largely undeveloped. Vendors are still seeking the right combination of development support, product image, and unanimous standards to create a peaceful, profitable market. When that happens, we will enjoy a revolutionary new publishing medium, whatever its initials are. ■

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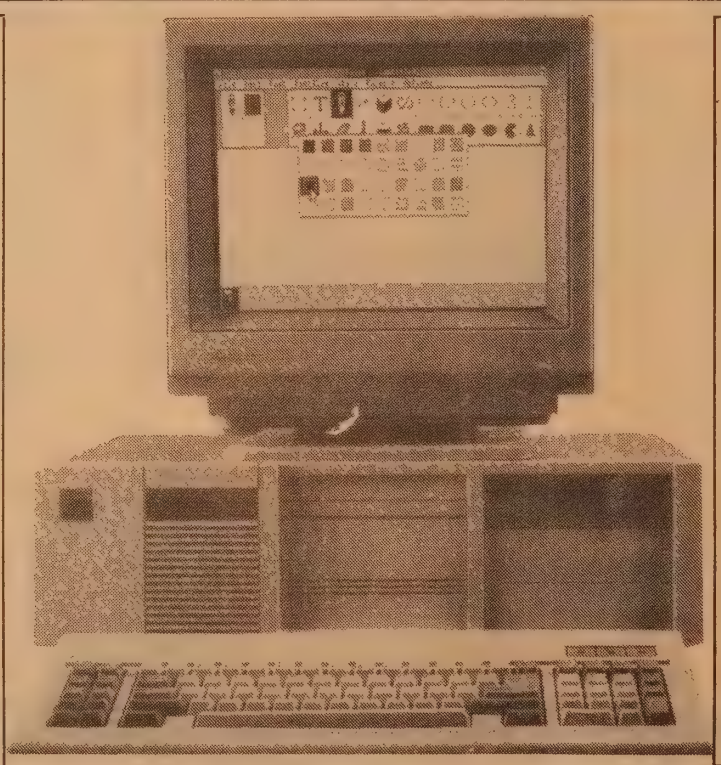

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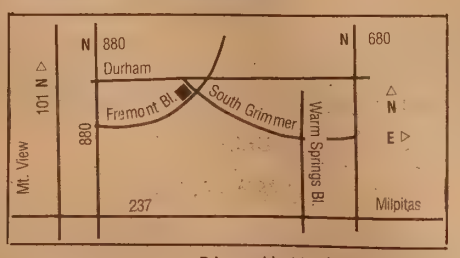

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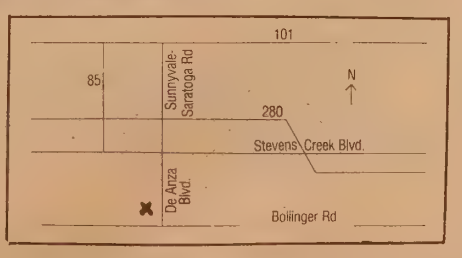

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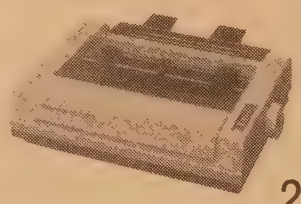

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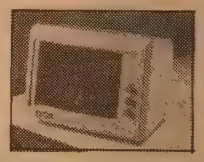

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MAC @ WORK

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The Macintosh SE/30

First Impressions

By Mary Eisenhart

For some reason, the Macintosh SE has never particularly charmed me. Given the choice between the bulky but expandable (to say nothing of colorful) Mac II and the smaller, less expandable SE, I went for the Big Mac. And I continue to be very happy with it.

Perhaps because I found the II such an easy choice, I wasn't overwhelmed when the SE/30 was announced. Sure, that math coprocessor gave it some pretty impressive speed in generating graphics and calculating spreadsheets. Sure, the 68030 processor was a whole lot faster than the original SE's 68000. Still, after all, it only had one slot. Still, it was determinedly monochromatic. And of its three available configurations (with 1 Mb of RAM, $4369 list; with a 40 Mb internal hard drive and 1 Mb of RAM, $4869; with an 80 Mb hard drive and 4 Mb of RAM, $6569), none was exactly cheap, in spite of some enthusiastic price-cutting by local dealers.

In short, I entirely failed to see why my technoid friends at Apple were running around chortling to themselves every time this machine was mentioned, as if Christmas was just around the corner.

The mystery was solved when the review unit arrived. Naturally, Apple in its wisdom sent out the top-of-the-line configuration (80 Mb disk, 4 Mb RAM). It took me about half an hour to develop an attachment to this machine rivaling that of an NRA

The Mac SE/30 offers speed, power, and IBM file compatibility in a compact desktop machine.

member for his gun.

Aside from the fact that it runs MultiFinder by virtue of having its four megabytes of RAM, which is a non-trivial productivity enhancer over the one-meg Plus that used to live here, the SE/30 is so fast that performing the normal mundane tasks of the day becomes, well, *fun*.

Physical Reality

The SE/30 occupies the same space as the Plus, a fact which is going to make it attractive to those who need power but don't have huge desktops to dedicate to their machine. Like all new Macs since the SE, it can use either the Apple Standard or Apple Extended keyboard, both of which take some getting used to if you're more familiar with the 128/512/Plus variant; the keyboard feels mushy to me, but its ergonomic design really does seem to make it easier to type quickly.

While it's positioned as part of Apple's compact and (relatively) portable product line, the SE/30 with the internal hard disk is noticeably heavier than the Plus, which was no lightweight itself if you had to carry it very far. Moving it around an office wouldn't be much of a problem; taking it along on a business trip would get pretty harrowing. It is not a substitute for a laptop computer.

The SE/30's single slot, called the 030 Direct Slot, offers expansion capabilities, including video, color, and gray-scale external monitors, sound and networking, and a host of third-party products have been announced for particular functions. It also includes an Apple custom sound chip which provides four-voice stereo sound for professional music applications.

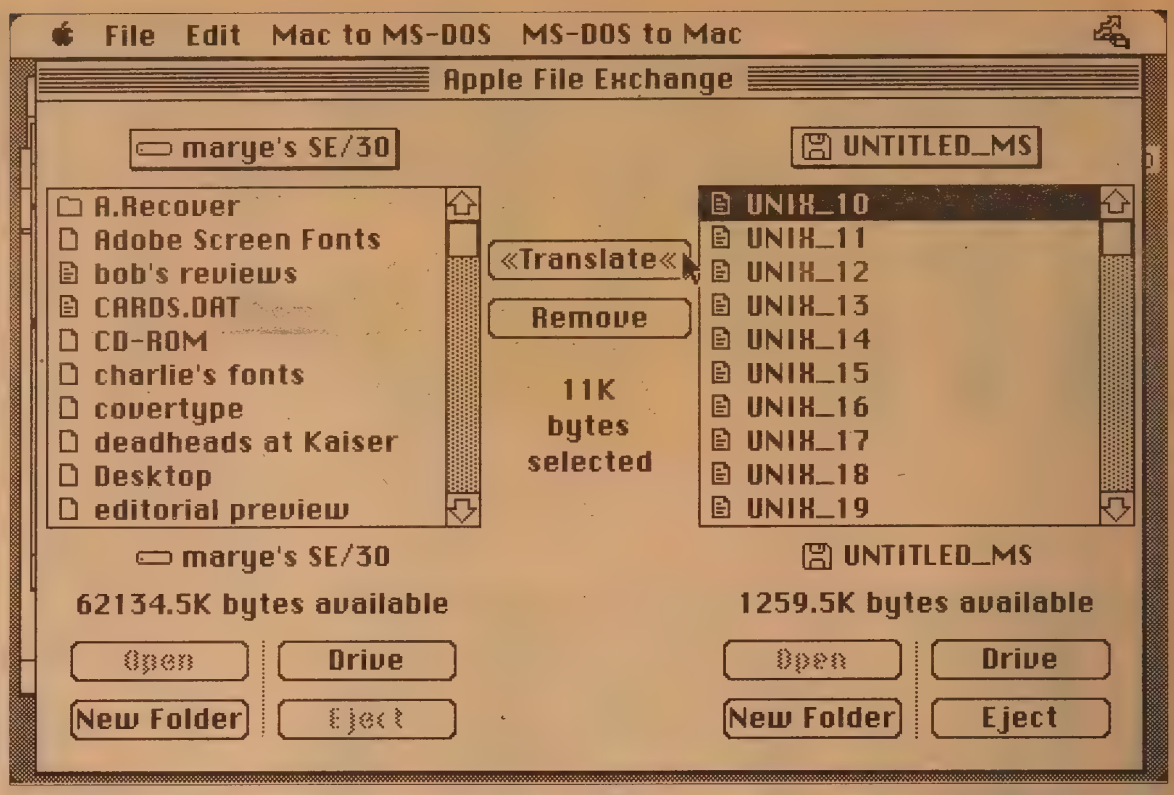
The SE/30 runs Macintosh system software version 6.0.3, which has special features to take advantage of the hardware. You may have to boot from the System diskette and install the System on the internal hard disk before you can use it; this was a straightforward and well-documented procedure.

One of the most attractive features of the SE/30 is the FDHD drive, which reads and writes not only 400 K, 800 K and 1.4 Mb Macintosh-formatted disks, but also 720 K or 1.4 Mb MS-DOS or OS/2 diskettes, as well as the Apple II ProDOS format.

Working With The SE/30

Especially if you're accustomed to a less powerful Mac, you'll probably be a little unprepared for this machine's speed. Files get copied almost before you can blink. Scrolling is instantaneous, even in memory-hungry programs like *FullWrite Professional*, even under MultiFinder with many windows open. While the SE/30 is an obvious choice for graphics and number-crunching, it's also an all-round productivity enhancer, essentially eliminating all those little delays that add up to hours of wasted time.

While I've encountered the occasional anomaly with System 6.0.3 (which only 68030-based Macs need or want), none was particularly significant—mostly older versions of applications which balked occasionally. The most annoying (and not consistently repeatable) problem is that occasionally a floppy disk, when dragged to the trash, keeps its little grayed-out icon on the desktop; the result is that the disk stays in memory and the Mac tends to ask for it back at awkward moments. If the disk has made its way down the sneakernet, there's nothing to do but reboot, which can get annoying (on the other hand, the SE/30 restarts with lightning speed, so you don't lose *that* much time). As we went to press, people at Apple, Symantec (we suspect the Shield Init in Guardian may have something to do with this), and the WELL were scratching their heads over this one, their diagnostic difficulties augmented by the complete disappearance of the problem...



The SE/30 includes the FDHD drive, which reads and writes DOS, OS/2, and ProDOS formatted disks as well as Mac formats. Using the Apple File Exchange software translators, it's easy to translate files from different environments.

The FDHD And Apple File Exchange

In these connective times, it's a great convenience that Apple has incorporated this multi-format drive into its new Macs. Used in conjunction with Apple File Exchange software (included), the FDHD eliminates much of the hassle of moving files from the IBM universe to the Mac. Of course, it will be better still when the IBM universe casts off its 5 1/4" floppies and gets with the 3 1/2" program.

The Apple File Exchange software included with the SE/30 translates text-to-text and DCA-RFT-to-*MacWrite* (and back). Other translators (e.g., *WordStar* to *MacWrite*) are available from authorized Apple dealers. Using an interface similar to the Font-DA mover, you select the file to be translated, the desired translator, and the destination volume. After the document's been translated, it will still look like an unnervingly blank document from the desktop, but *MacWrite* will open it happily and save it as a *MacWrite* file. (Another approach would be to look at the alien textfile from within ResEdit, define its type as TEXT and its creator as MACA (*MacWrite*); you may have to strip out some funny-looking linefeeds, but this should yield a text file you can work with.)

If the ability to read DOS or OS/2 files is one of your chief requirements, check with your Apple dealer to see whether the translators you need exist, and with the vendor of the software you'll be using to see what other formats it can import/export. Assuming the availability of the translation software you need, the FDHD is a real time-saver.

If you need an indefatigable workhorse computer that doesn't take up much desk space, and if you don't expect to need more than one expansion slot, the SE/30 is a great choice.

Conclusions And Unanswered Questions

If you need an indefatigable workhorse computer that doesn't take up much desk space, and if you don't expect to need more than one expansion slot, the SE/30 is a great choice. Its higher-end configurations rival some of the Mac II line in price, but its superior performance and compact size make it a better choice for many business uses.

Still an open question is how the SE/30 will relate to A/UX. At press time, we had not received A/UX 1.1, which supports the 68030 processor as 1.0 did not. The SE/30 does not have the II/IIx's Paged Memory Management Unit (PMMU) chip, and its documentation is silent on the subject of UNIX. Since we've heard a wide spectrum of expert opinion on the probable effects of trying to run A/UX on the SE/30, we'll try it when the update arrives, and report back.

Similarly, we have not yet been able to test the SE/30's performance with various cards and peripherals, and will be discussing the results of different hardware combinations in future issues.

For the moment, it's obvious that the SE/30 is a powerful machine which may well become the mainstay of Apple's hardware line. It's a real boon to productivity, and, in classic Mac fashion, it is also Big Fun. ■

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MAC @ WORK

HYPERCARD

BY BIRRELL WALSH

In The Cards And On The Air

Journalist Designs Software In Five Evenings

PHOTO: HOWARD GELMAN

David Anthony using the stack he designed for election coverage on KQED FM.

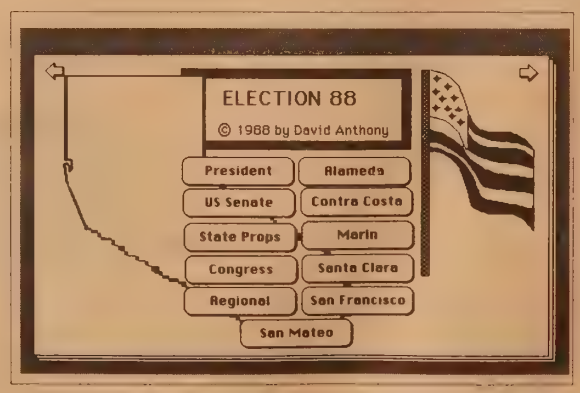
KQED-FM is San Francisco's leading public radio station. When they switched to an all-news format, they knew their local news operation would be compared with the luminous National Public Radio news programs. It was in that context that the news department looked at the 1988 elections. They needed to report on all the local results, coherently and quickly, with a small staff. They did not have a contingent of database jockeys to compute results, nor a stable of rewrite people to embed the results in updates. David Anthony decided to design a stack to track election returns for KQED-FM. It was his first venture into HyperTalk.

The stack shows what *HyperCard* can do in the hands of a person who is a professional, but not a professional programmer. A 1988 graduate of Stanford's Communication Department, Anthony created what appears to be a simple database of results. Staff can fill in raw numbers as they are received from the field. Reporters can recall the results in specific races by clicking one or two buttons. The user of the stack needs no familarity with programming or with *HyperCard*.

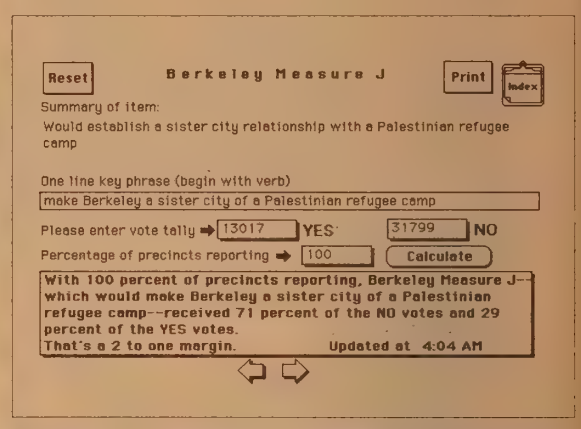
Behind the simplicity is a lot of thought and careful design. The "calculate" button on each issue card rewrites the on-air copy (in bold print). If the results are approaching two-to-one or more, it notes that fact. And it adds an update time so the on-air talent knows how current the results are.

The state-wide races for president and for senator are entered by counties. Anthony's system lets a reporter specify any county or group of counties. The stack tallies the results for that region. With this tool, KQED-FM staff can do quick analysis of the demographics of the vote.

For those who prefer hard copy, all the results can be printed out with *HyperCard*'s report function.



Anthony's stack allowed quick updates on major races in California and in the San Francisco Bay region.


Reset
Berkeley Measure J
Print
Index
Summary of item:
Would establish a sister city relationship with a Palestinian refugee camp
One line key phrase (begin with verb)
make Berkeley a sister city of a Palestinian refugee camp
Please enter vote tally ➡ 13017 YES 31799 NO
Percentage of precincts reporting ➡ 100 Calculate
With 100 percent of precincts reporting, Berkeley Measure J--which would make Berkeley a sister city of a Palestinian refugee camp--received 71 percent of the NO votes and 29 percent of the YES votes.
That's a 2 to one margin. Updated at 4:04 AM

Each card calculates percentages for one race and writes a summary for use on air.

Five Evenings At Home

I asked Anthony why he wrote the software, and why he used *HyperCard*. "With all the races in the Voters Handbook, there is no way we can keep track of every race, even when we choose the most important issues. The stack lets us do that. A skilled reporter uses the summary that the script writes and builds from it on the air. Four people used the stack. Three of them had never used a Macintosh before.

"I must admit that I was inspired by ABC's use of *HyperCard* during their convention coverage. I needed a book, because the documentation that comes with *HyperCard* is not enough to let you use the program. I used *Hands-On HyperCard* by Jones and Myers (John Wiley & Sons)." How long did a working on-air tool take to program? "Four or five evenings at home. *HyperCard* is fast and easy."

Station manager David Hosley is supportive. He is looking forward to an all-Macintosh newsroom within two years. Anne Marshall, the News Director, found that she sometimes bypassed the stack to go with incoming wire copy. She would like on-air talent to have on-screen access to AP while on the air. David Anthony is looking into stackware that will do just that. Stay tuned. ■

You can leave messages, comments, praise, and blame for stackware and HyperCard *on the WELL (415-332-6106; user ID "birrell") or CompuServe (User ID 72466,3567).*

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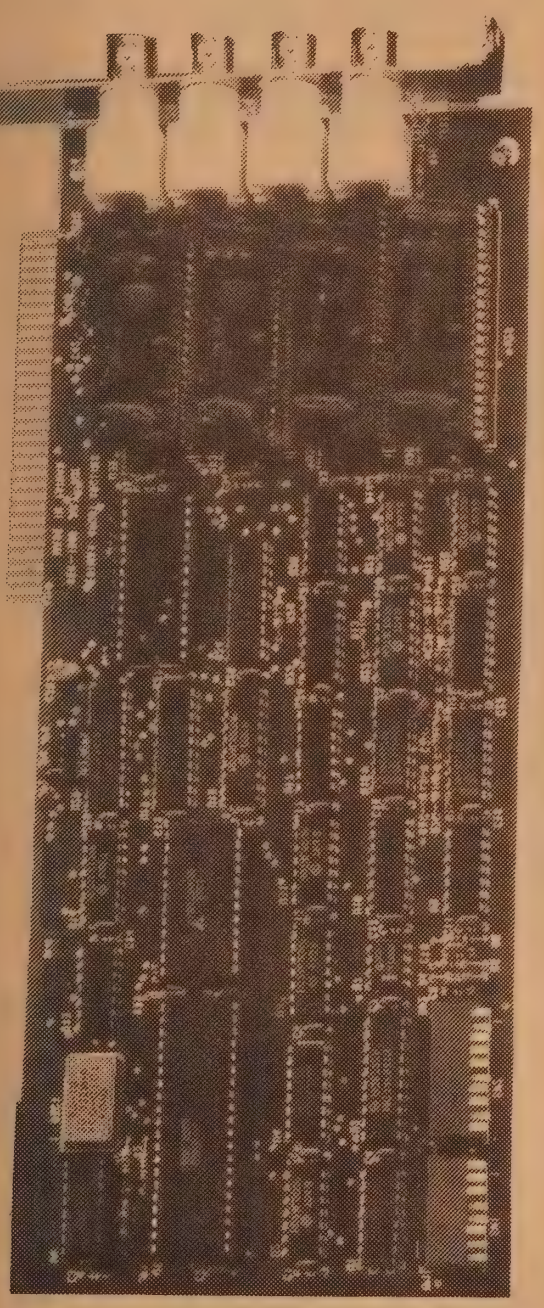

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MAC @ WORK

BMUG

BY DAVID MORGENSTERN

System Update Confusion, Spring Cleaning Your Hard Disk

Get out the mops, brooms, and brushes, 'cause it's cleanup time at BMUG. There's a byte of news, views, and no time for a snooze.

There's plenty of fore-court action and slam-dunks at the weekly BMUG meeting. It's a tough game at the Physical Sciences Lecture Arena, with more than a few fouls called. Go, team, go!

When Folk Heroes Collide

The BMUG meeting usually has a number of traditional questions and rituals. The price of Apple stock is always given at the beginning of the question-and-answer period. There is always a printer question and, nowadays, a virus question. This year has seen the rise of the Apple legal question. The latest (as I write) is the suit filed by the Apple Corps Ltd., London, which charges that Apple Computer violated agreements on the use of the Apple trademark.

The Beatles sue the Boys in the Garage? British versus American cultural mythology? Sorry, folks, it's just the Lawyers again.

Apple's been riding a bit high for the past year or so. They've been smug, autocratic, and arrogant. Apple somehow thought they were exempt from the Law of Supply and Demand. They couldn't imagine that if prices went up, users would look to lower-priced non-Apple solutions!

The stock analysts are now downgrading Apple stock. They say that Apple's recent product announcements (the SE/30) undercut their existing products (Mac II and IIx) and Apple is confused about what customers want. Managers are running around pointing fingers for the chip buying fiasco, low second-quarter earnings, price hikes, and price reductions. It's Eye of the Tiger time in Cupertino town.

System Insanity—Episode 1.0

Apple came out with a new system software revision during the Macworld Expo, System 6.0.3. The press release couldn't decide whether to call the stuff "Systems Software" or "System Software." They covered the bases in their press release and went with both.

The marketing department had additional troubles with this baby. This update isn't much of an update. Hardly any of the system files and utilities were changed: a revisionary look into the present.

There were some changes to the System file, in the Time Manager routines, AppleTalk driver, and the FDHD (SuperDrive) driver software. All this stuff helps your SE/30 and other '030 boards work better. The Apple File Exchange utility application and MultiFinder were also updated.

Apple is telling users *not* to bother with the new version unless they're running an SE/30 or Mac IIx. Unlike our volunteers manning the BMUG HelpLine, Apple is not used to telling users to avoid its system software updates. Our usual line after a new System release is to wait and see what happens. There's no reason to avoid 6.0.3, if you want to use it. It's the spittin' image of its 6.0.2 cousin.

Apple did make a big deal about its "change in release *strategy* for Macintosh System Software." Instead of recommending that all users upgrade to each new version of the system software, Apple will "classify" releases into two categories, *product support* and *major system* releases.

Product support releases will be for specific CPUs (this is the Year of the CPU, remember?), peripherals, and network products. Apple says it will "specify exactly who should be using the new software..."

Major system releases will "contain features beneficial to all users." Perhaps we might want to ask Apple about the work it has done in the past couple of years for users of 512 K Macintoshes. Silence is platinum.

Apple had a chart about a year or two ago with its recommendations for system software. It used happy faces for acceptable combinations, and frowning or doubtful faces for the rest. There was not the myriad of hardware combinations to keep track of then. Now there are eight or nine different machines, memory configurations, monitors, boards, and networking products in the equation. Have a nice data.

System Insanity — Episode 1.0.1

The Macintosh system software numbering system remains a mess, and the new release strategy will make things worse. A frequent question asked of BMUG HelpLine callers is "what version of the System and Finder are you using?" It's sometimes hard to tell on earlier sets. The latest 6.0 systems are helpful because they read out both of the version resources in the **Get Info** box.

There are two version resources for Macintosh programs (everything Mac-ish has two sides, *Resources*, or stuff the program or file needs for itself, and *Data*, the stuff you want the program to work on, for example), vers ID=1 and vers ID=2. Version ID=2 tells you which system set the program goes with. ID=1 tells you the "real" version number of the software, usually a long string of numbers, decimals and sometimes letters.

It's important to know the version numbers because of software incompatibility problems. Each major system revision brings a pile of extra work for your friendly neighborhood programmer. He/She/It has to bring their software into agreement with the

Just the Fax

You'd think the latest toy at the BMUG office might be a new scanner, color monitor, or accelerator board. Wrong. It's the new fax machine for technical support, processing orders, and handling membership screw-ups. Non-BMUG members can ask one question and get an answer. BMUG members can send questions at any time. The BMUG fax machine's number is (415)849-9026.

Please do not use the fax to request information about BMUG for now. To get BMUG information call: (415)849-9114 or (415)549-2684.

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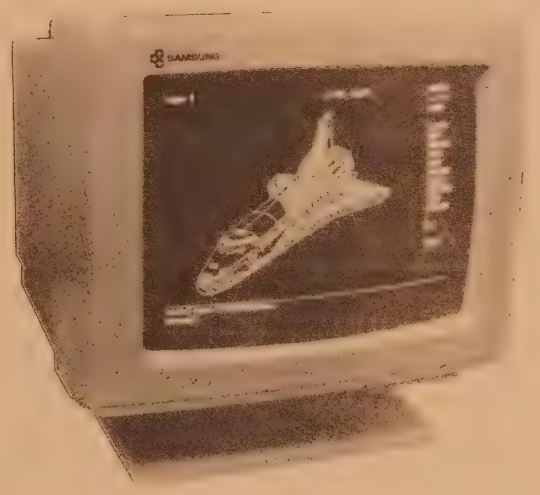

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March 30: CMS Drives, SiClone's *MacAdapt* and *Si3033* accelerator.
April 6: DigiTalk *SmallTalk 5*, Farallon Computing's new stuff.
April 13: Bill Gates.
April 20: Symantec Corp. *LightSpeed Pascal* 2.0, Software Ventures *Microphone II, version 3.*
April 27: Pacific Micro Marketing (color card), Preferred Publishers, Inc. *DAtabase* and *Vantage.*

way the new system operates. This isn't so bad if it's a game, but your database program is a different story.

A quick look at the contents of the four-disk system set reveals 18 different version ID=1 numbers. There's everything from 1.0 to 6.1! These numbers aren't usually a problem to users — until they start using or changing their System.

Version ambiguity strikes in the Installer program. In among the choices for installation are AppleShare Workstation 2.0.1 and LaserWriter 5.2. Can those be right? The Installer says it's version 2.6.1, but I'm using System 6.0.3. It's the same problem in the Control Devices (CDEVs) accessed through the Control Panel DA. Who's on first? What's on 2.6.2?

Small System Bits

• Tempers are flying in Apple Development Land. It's all about how to do system-wide macros, with a scripting language. This would let Mac people do the "good" things PC-DOS does, like batch files. Much of this can already be done by CE Software's *QuickKeys*, but that isn't an Apple solution.

The squabble is over how to write commands that all programs will use. Some folks want to use the most familiar language to Mac users — HyperTalk. Others want to use a new set of commands, some sort of AppleScript.

• Some companies will go to any lengths to ruin great betaware (unreleased software). The latest casualty is *Wingz* by Informix. After years of hype (and great Macworld Expo booths), it's finally out of development. It hit the stands in late February at around $280.

Spring Cleaning For Your Hard Disk

All the talk about new system software put me in a mood for spring cleaning my hard disk. Here are some things to think about when swinging the dustmop.

• Always use the Installer program when you update your System. The days of drag and roses are gone! The "usual way" is to start up from the new System Tools disk and run the Installer program. Choose your flavor of Mac and hit the install button. If you hold down the **Command** and **Option** keys

The Beatles sue the Boys in the Garage? British versus American cultural mythology? Sorry folks, it's just the Lawyers again.

while hitting the **Quit** button, your Mac will automatically restart.

• Make a backup of your hard disk before you install the new system software. This is your insurance policy in case there's trouble with the new system and your old software. If you can't wait that long, at least archive your old system folder as collision coverage.

• There are problems with some of the system software. The major offenders are Easy Access, a utility to help people that have trouble using a mouse, CloseView, a CDEV for visually handicapped users, and MacroMaker, the current Apple macro recording software. The two aids for special needs should only be used by the users in need — they can be accidentally triggered and are very confusing to the unsuspecting. MacroMaker conflicts with many more useful CDEVs and INITs.

• Look through your folders and files. There should be only one System file on your hard-disk. Use the Find File DA just to be sure. People that recover damaged disks onto their own can forget the extra System or two in the Recovered folders gathering dust on the DeskTop.

I always find at least five or six megabytes' worth of old junk on my hard disk when I really look. If you haven't used an application or datafile in six months, or a year, it can go on a floppy disk.

• Take a look at your hard disk with a program that can "see" invisible files, like DiskTools or ResEdit. You may have come in contact with the new DeskTop Manager software. It will leave a couple of files named DeskTop DB and DeskTop DF that may run a couple of kilobytes. If you're not using DeskTop Manager deliberately, you don't want them. Bye-bye.

Shareware Spotlight

The most beautiful shareware screen saver around is the CDEV, *Moire*, by the Australian programmer, John Lim. It sends line shapes, pentagrams, rectangles, hourglasses, and many more flowing around the monitor. It's wonderful in black and white and a knockout in color.

Moire also turns off your keyboard when it comes on. This is a real lifesaver for people with young children and Mac-loving cats.

It comes with a detailed manual and discussion of screen saving. John also includes a conversion program that turns the CDEV into an INIT for people using System 3.2, or who use floppies. Pretty classy for a $10 shareware fee. Support shareware authors — Send in your $$$.

The latest version of *Moire* is on BMUG Update Disk 22. ■

What is BMUG?

BMUG is an educational, non-profit corporation promoting the exchange of information. Like any growing organization it is many different things to its 6,000+ international membership.

BMUG, Inc. is a computer user group located in Berkeley, California. The group specializes in computers using a graphical interface. For a while that meant the Apple Macintosh™ but now includes other makes, models, and operating systems, including the NeXT best thing. BMUG supports many Special Interest Groups (SIGs), a five-line Bulletin Board System (BBS), help-line, software library, weekly meetings, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter." Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue every Thursday evening, 6:00 - 9:00 (or whenever we finish), in the Physical Sciences Lecture Hall on the U. C. campus. The BMUG HelpLine, (415)849-HELP, provides technical assistance and telephonic hand-holding during business hours (10:00 a.m. - 5:30 p.m.). If your question can't be answered on the spot, we try to get you in touch with someone that can help. Of course, not every problem can have a happy ending — but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 350+ double-sided disks filled with the latest versions of public domain or shareware programs and *HyperCard* stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM*™, our CD-ROM product.

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (415)549-BMUG.

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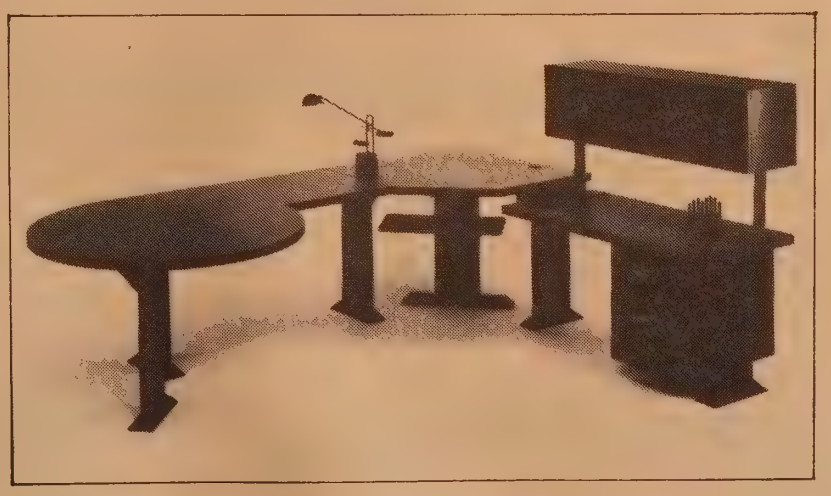

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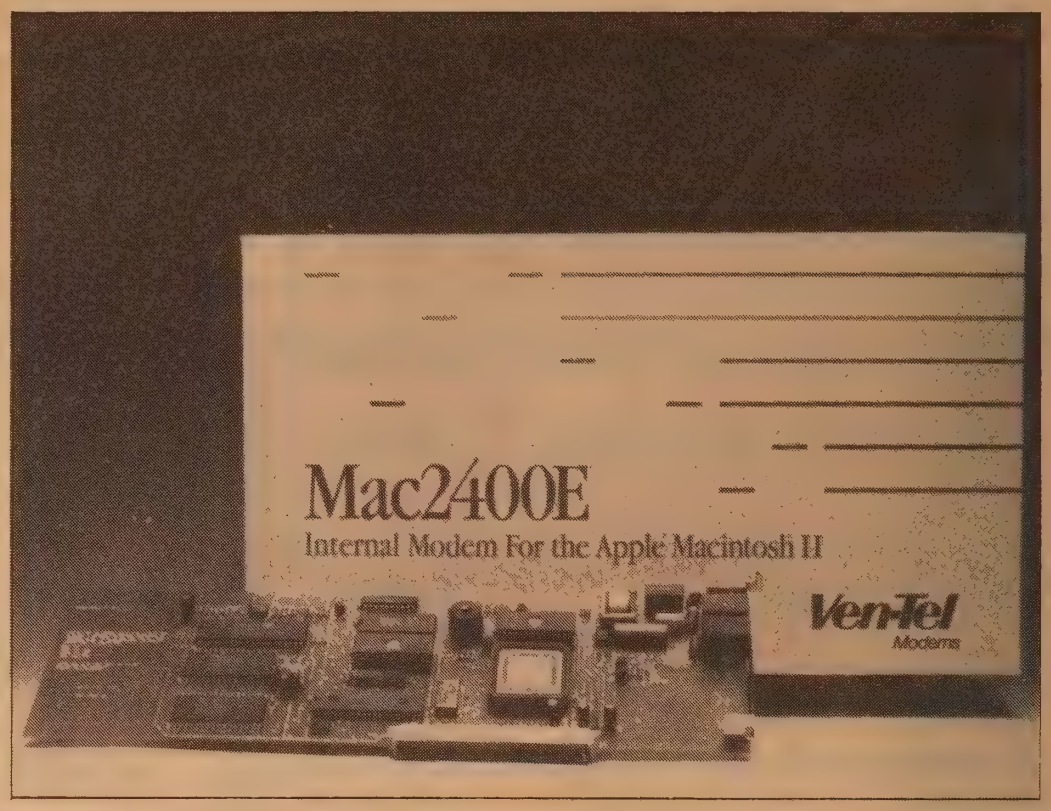

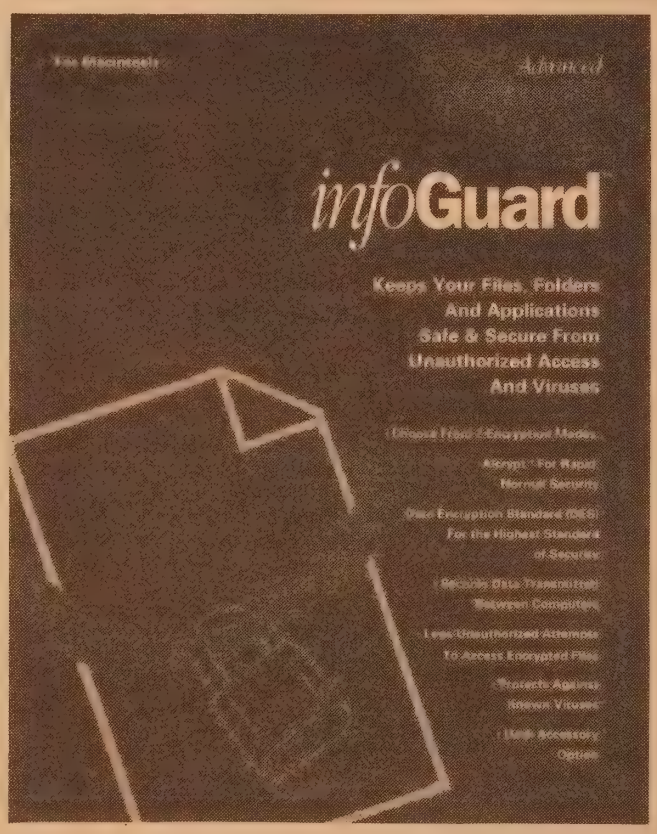

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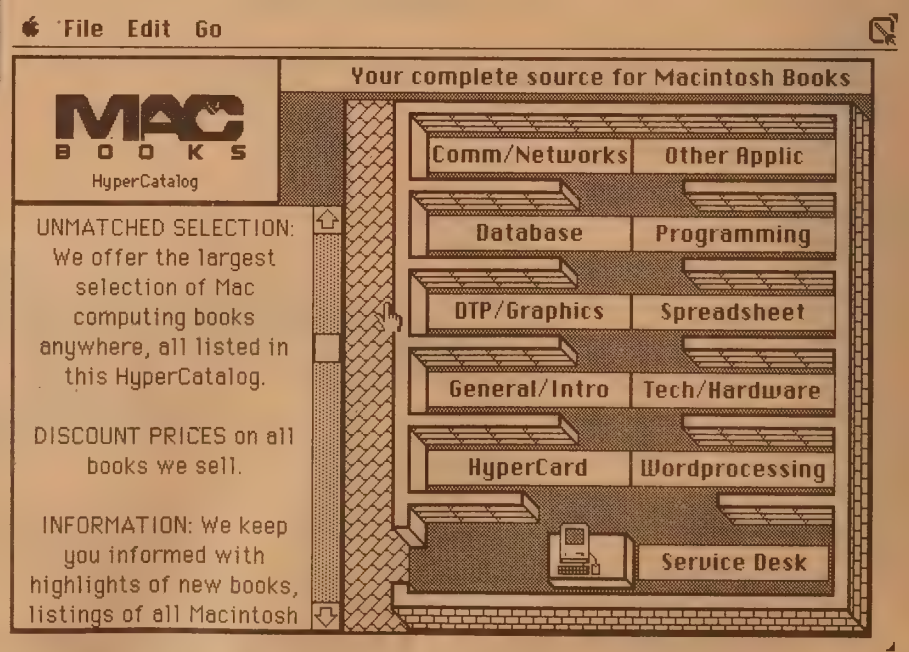

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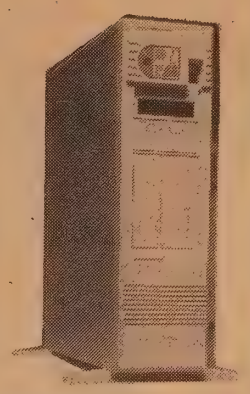

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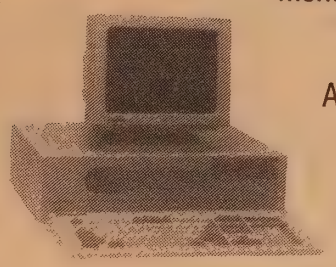

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BY MIKE MARKOWITZ

The Apple II–Mac Connection

A lot has been written lately about "connectivity" between the Macintosh and the world of IBM PC's, but little do we see about exchanging data between Macintosh and Apple II computers.

It's surprisingly easy, and getting easier all the time, but it often seems to be a well-kept secret, as far as Apple is concerned. Apple's school solution for using Macs and II's in the same environment is a rather expensive kind of networking, which makes the IIe or IIGS into a dumb terminal attached to a Macintosh file server.

There are much simpler solutions for simpler needs: some require modems, others require only a 3.5" disk! A lot of families use an Apple II at home, or in school, and a Macintosh at work. The purpose of this column is to share with them a few things I've learned.

Apple File Exchange

Hidden away in the Macintosh System Folder is a magical little application called Apple File Exchange (AFE). Most Mac users have no idea what it does. Normally when you insert a 3.5" disk formatted under another operating system into a Mac drive, the Mac tells you it's unreadable, and asks if you'd like to initialize it. This rule is suspended when you're in AFE. Insert a ProDOS disk into the Mac drive, and AFE reads the directory, displaying a scrollable list of files. Normally, only plain ASCII (text) files are convertable. You select the files you want to convert, click on the "Translate" button, and with blinding speed the files are written out as native Mac text files. AFE can translate in the other direction as well, converting Mac text files and writing them out in ProDOS format.

An irritating peculiarity of *AppleWorks* is that it does not save "true" ASCII text files—it throws in extra carriage returns that screw up the appearance of your page. This problem has finally been solved by Beagle Bros. with a utility called AWP to TXT, included in the *TimeOut PowerPack* (list price: $49.95).

The new, high-density (1.44 Mb) floppy disk Apple introduced in the Mac IIx can read MS-DOS disk formats as well as ProDOS. We can only hope that Apple will make a version of this nifty device available to Apple II users as an external drive.

Meanwhile, a small company called the Engineering Department, founded by four of the original Apple II engineers, has produced a little module that plugs into the external floppy disk drive port of the Mac, and tells the internal 3.5" drive how to read, write and format MS-DOS 720 K disks. An Apple II ProDOS-compatible version of this module is reportedly under development...

Mike Markowitz is a computer engineer for a large Southern California aerospace firm. He has been writing about Apple II computing since 1984. You can reach him on AppleLink (MOUSKOWITZ), The Source (SIG 060) or GEnie (M.MARKOWITZ2).

PC, Phone Home...

With modems and telecommunication software, it is even simpler to move data between any Apple II and any Mac. The direct method requires some coordination between sender and receiver. The receiving party sets his or her communication software to receive an incoming file. The sender makes sure the text file is saved on a disk the computer can access, and that both parties are using the same "file transfer protocol" such as XModem, or Kermit. I don't really understand file transfer protocols either—ask your local BBS guru to explain it... The sender dials up the receiver, and, when the connection is established, issues the appropriate "Send File" command. The details vary according to the particular communications software. For the Apple II series, *MouseTalk* (United Software Industries, $119.95) is far and away the best communications package.

The indirect method (or "email dead drop") requires that both parties belong to the same online service, such as Compuserve, The Source, GEnie, MCI Mail, or AppleLink Personal. In my experience, the mathematical odds are strongly against the probability that the person you want to communicate with belongs to the same service you do—but some wonderful day everything will be connected to everything else by transparent gateways.

In either case, the sort of plain text files that go out over phone lines will strip away all the fancy fonts and formatting that make owning a Mac (or a IIGS) such a typographically orgasmic experience. The only word processor that exists in both Apple II and Mac versions is *WordPerfect*, but (as far as I can tell) they cannot exchange formatted files.

Graphics

Macintosh graphics come in a bewildering variety of formats (PICT, MacPaint, TIFF, PostScript etc. etc.) So do Apple II graphics (single hi-res, double hi-res, two kinds of super hi-res, Print Shop, etc.). A new graphics utility, *The Graphics Exchange*, available from Roger Wagner Publishing ($49.95) makes it possible to convert between many Apple II graphics formats and *MacPaint* documents (any color palette information would be lost, since *MacPaint* uses monochrome bitmaps.

For object-oriented graphics (like *MacDraw*, or *TopDraw*) I am not aware of any Apple II<—>Mac file transfer solutions. Does anybody out there have one?

Peripherals

Another aspect of Mac–Apple II connectivity that should not be overlooked is the growing commonality of peripheral devices, particularly for the IIGS. The external 800 K floppy disk drives of the Mac and the Apple II are mostly compatible (except for the abominable Unidisk, an "intelligent" drive developed for the IIc). The original Macintosh mouse also works on the Apple IIc (on the IIe it needs an adapter card). Most devices that work with the Apple Desktop Bus (ADB) on the Mac SE and the Mac II will also work on the IIGS. This includes mice, keyboards, joysticks, etc. The ImageWriter II printer and the mighty LaserWriter work on either system with the very same cable. The IIGS and the new Apple IIc+ also use the Mac-style ("mini-8 DIN") serial port connectors. What all this means is that Apple II owners who decide to trade up to a Macintosh can often retain a sizeable part of their hardware investment, or simply share peripherals.

Programs

At Macworld Expo in January, Jean-Louis Gassee, Apple VP for research and development,was asked about the possibility of a future Apple II that could run Mac software. He dismissed the idea as a "Swiss Army Knife" that would have to cost more than its potential buyers would be willing to pay. Systems where two different microprocessors coexist under the same roof have rarely been successful—perhaps the only exceptions were the variety of Z-80 cards that allowed the Apple II to run CP/M software.

The Apple Programmers and Developers' Association (APDA), which was recently taken over by Apple Computer, Inc., offers an interesting "Cross Development System" that allows programmers to use the Macintosh to develop programs in assembly language, C, or Pascal that run on the Apple IIGS. This is a rather complex family of software products that run in the environment of the Macintosh Programmer's Workshop.

It would certainly be possible to emulate the Apple II in software on a powerful system like the Mac II, just as *SoftPC* (from Insignia Solutions) emulates MS-DOS on a Mac. But who really needs to run Apple II software on a Macintosh? It would be a solution in search of a problem. ■

RESOURCES

APDA
Apple Computer, Inc.
20525 Mariani Avenue, MS/ 33G
Cupertino, CA 95014-6299
(800)282-2732

Beagle Bros.
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San Diego, CA 92121
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El Cajon, CA 92020
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United Software Industries
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Canoga Park, CA 91304
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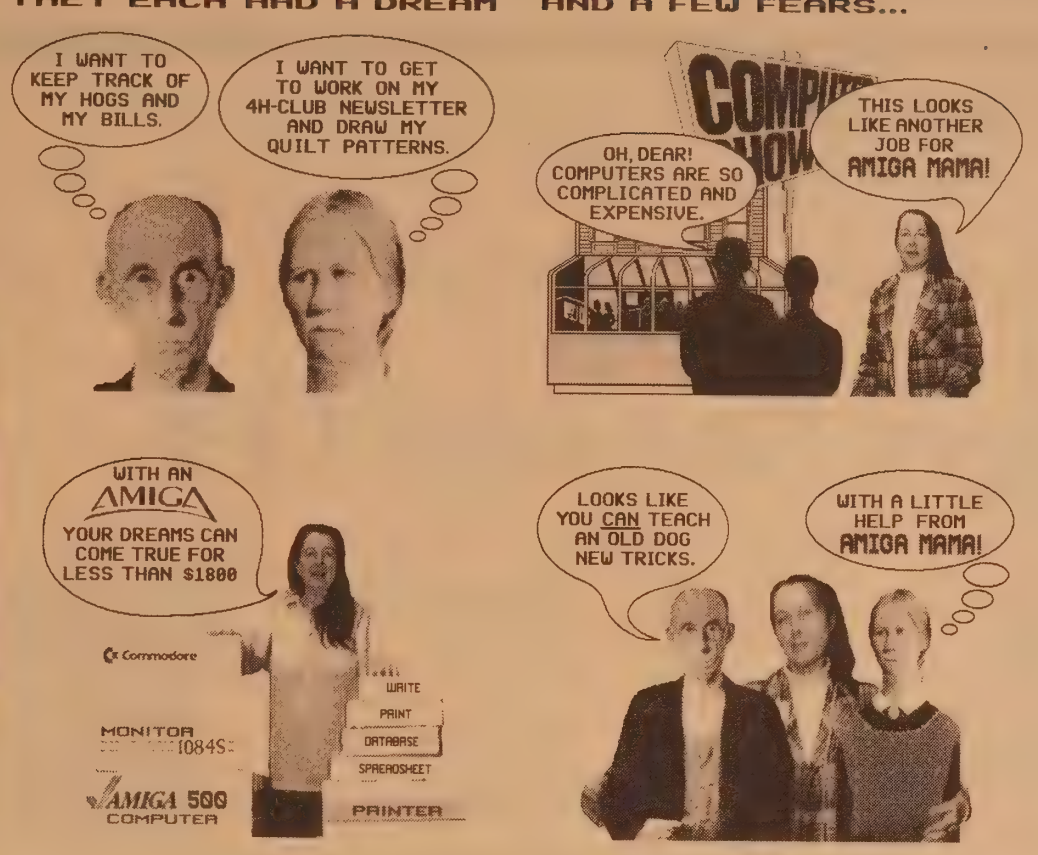
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BY MATTHEW LEEDS

Aegis Sounds Off

All work and no play can ruin anyone's attitude. When I started using computers it was for play. Now it seems like it's all work. I've got a full-time job with a software company where I use Macs and PC clones all day long. When I get home at night I work on a book I'm writing, using an Amiga. Every now and then I get to play with new software, just play.

Other folks like to play computer games, shooting down MiGs or wandering through an unknown land discovering magic spells. I like to explore new software, looking for elegant user interfaces, extraordinary new features, and a remarkable understanding of what it takes to have that perfect Amiga feel.

I recently received a copy of *Audiomaster II* from Aegis Development. I'm not a musician, but I've been having a lot of fun playing with *Audiomaster*, making new and unusual sounds out of everyday noises. *Audiomaster* is a digital sampling system (you'll still need a hardware sampling device) that handles both mono and stereo. It has a waveform display, similar to an oscilloscope where you can edit and modify a sound sample.

Audiomaster handles the standard cut, copy, and paste functions you would expect in any editor, but it goes much further than that. You can apply low pass filtering; adjust the volume, pitch, and numeric sampling rate; set the loop points; automatically find the best loop point; and save samples in IFF mono, IFF stereo, or Sonix formats.

Now I'm sure that for some of you all of this makes *Audiomaster* sound like a great tool for some music project you need to finish, or the ideal program for creating sampled speech files; for me, though, it was exactly the right opportunity for some creative fun. I've got a small program that keeps an eye on my floppy drives, and when I insert or remove a disk it makes a sound. The sounds that came with the program were a "yum" when you insert a disk and a "yuck" when you eject a disk. I spent the better part of an evening making different sounds and trying them out. I ended up with a disk insert that was sampled from a James Brown song, and a disk eject that sounded like a toilet flush from hell. Great entertainment.

Aegis has also released *Sonix SoundTrax* Volumes One & Two, a series of interactive songs for Sonix. Each volume has two full disks of songs that make use of clean sampled instruments and careful selection of key placement so that sounding an off-key note is almost impossible. Aegis has also reinstated the Aegis-BBS. It offers support for technical questions, warranty and update information, product announcements, beta test information, product demos, and info on upcoming contests. The number is (213)399-7316 at 300/1200/2400 baud 8.N.1. Full color support is provided and ANSI terminal packages are recommended.

Audiomaster is a digital sampling system that handles both mono and stereo. It has a waveform display, similar to an oscilloscope where you can edit and modify a sound sample.

Other Software News

The Disc Company has released an upgraded version of *Kind Words* V2.0. The new version includes the 100,000-word *Merriam Webster Dictionary* and the *Merriam Webster Electronic Thesaurus*, which accepts over 40,000 words and offers 470,000 synonyms. For a limited time the new version is available at half price when you order direct and include the front or back manual cover of any other Amiga word processing program.

Also newly released by the Disc Company is *Superback*, a backup utility. It has one of the nicest interfaces I've seen on a backup program, and offers most of the features you'd expect or want. This would be a good choice for a novice user as it is very simple to use. It is a little less expensive than *Quarterback*, but not quite as powerful.

The upgrade to *Deluxe Paint*, version III, is in final beta testing and may be on the streets by the time you read this. Aside from the fact that EA has finally cleaned up the interface to work correctly (hard disks are now known as DH0:, it no longer asks for a disk to be put in DF1:, fonts are handled in a requester), a completely new area of functionality has been added. *DPaint* now does animation.

A set of screens can be loaded into memory and worked on individually. Brushes can be animated and stamped across the set of screens in memory. Also added is support for half-brite, wrapping a brush around an object, tint mode, painting in overscan mode, and a re-designed airbrush tool. EA has an upgrade path for current owners of *DPaint*; contact them directly for details.

Pick of the month for best public domain program goes to *Exploding Windows* by Ed Scherer. Tired of watching your windows open in the same old boring fashion? Try *Exploding Windows*. When you click to open a window now, you'll get a wonderful blur of motion; when you close a window you'll see it collapse into itself. Nothing useful but great fun.

Almost-pick of the month goes to *Surf* by Eric Davies. *Surf* is a program for producing bezier surfaces of revolution. It produces awesome pictures of wineglasses and doorknobs, and other objects one could turn on a lathe. *Surf* includes the capacity to map IFF image files onto any surface that it can draw. If you want to experiment with creating three-dimensional objects, this is a good place to start inexpensively.

Finally, mark your calendars for the start of the Amiga Developer's Conference, coming to San Francisco starting June 14th. No, you won't be welcome at the door (unless you've paid to attend) but there are plans afoot to take advantage of the presence of so many members of the Amiga community. Nothing has been firmed up yet, but discussions have revolved around a series of seminars, a trade show, a show-and-tell event, a multi-media event, and a giant party. I'd put my money on the last possibility. ■

RESOURCES

Aegis Development
2115 Pico Blvd
Santa Monica, CA 90405

The Disc Company
3135 South State Street
Ann Arbor, MI 48108

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404

Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics,and related fields.

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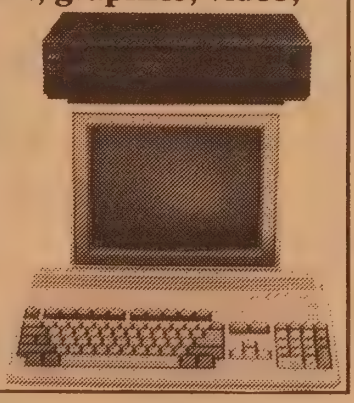

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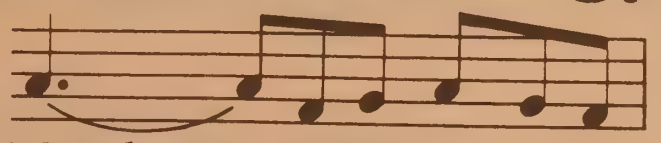

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BY DAVID HAWKINS

Getting Information About Your Atari

Every month I sit down to write a column about the Atari ST. In each case I have a few reliable sources that I go to for accurate news and information. You too can use some of these sources to learn about programs and equipment that I haven't covered in my columns.

Logging In

I spend most of each day logged into a computer system somewhere. I check a number of systems, some of which provide good information about the Atari. The only investments I have to make are (1) the modem, (2) connect charges, if any, and (3) the phone bill.

Bulletin Board Systems

MicroTimes has listings for a number of BBSes. Normally these are free. Some of them provide very good information about a number of subjects. For instance, I normally use BBSes when I'm playing a difficult game, since I can get hints very quickly. I can post a description of where I am stuck and

Often if you have a problem with a program, you can post a description of your difficulty on GEnie and get a response from the programmer (or a very knowledgeable user) within a few days.

check back in an hour and find some help. Sometimes I've figured it out by then, but sometimes the BBS has made the difference in whether I finished the game or not.

Conferencing Systems

Some larger systems have more participation from both Atari and developers than the small local boards. The best of these for the Atari user is GEnie, which offers several very active "roundtables" with real, up-to-date information. Often if you have a problem with a program, you can post a description of your difficulty on GEnie and get a response from the programmer (or a very knowledgeable user) within a few days.

There is also a world-wide system of UNIX-based computers called USENET, which has discussion areas on both the ST and on the Atari 8-bit computers. You may work for a company or be a student at a university which is tied in to USENET. Or you can log into a system like the WELL in Sausalito or Portal in Cupertino and read these newsgroups.

Unfortunately, conferencing systems are often hard to use, and they do charge a connect fee. Although I find a great deal of useful material on USENET, I also find myself having to skip a lot because I don't have time to read it.

On the plus side, there are people from Atari reading these systems, so you can often get news from very reliable sources. If being up-to-date is important to you, then conferencing systems are the way to go.

Computer Clubs

MicroTimes also lists some Atari-oriented computer clubs and user groups. I visited the San Leandro Computer Club in January and learned a lot. They had many suggestions for programs that I could review in future months, plus some recommendations.

For example, there is a lot of good software available for doing business work on the Atari. However, I've found it hard to get excited about reviewing spreadsheets. (One reason for this may be because the last time I tried to review an ST spreadsheet it kept crashing on me.) But I heard some good strong recommendations for *LDW Power*, a *Lotus 1-2-3* clone. So I'm going to check into getting a review copy and covering it in more detail in a future column.

There were also people at the Club who knew a lot about music programs for the Atari. (In this case I'll need to get out and interview someone who is more knowledgeable, since the only instrument that I play is the banjo.) I did hear that Atari is about to do a major promotion of the ST as a music machine.

So I'd recommend checking out a meeting of a computer club. It is often a good place to pick up public domain software, which can be a good deal.

Dealers

Another information source that has been very helpful to me is the local Atari dealers. They often know things I can't find out anywhere else about happenings in the Atari world.

Another information source that has been very helpful to me is the local Atari dealers. They often know things I can't find out anywhere else about happenings in the Atari world.

Talking to dealers also keeps me from getting all wrapped up in a product that isn't even released yet. The dealer will often know the product's strengths and weaknesses, and will mention bugs that a reviewer might miss. The dealer will also have some idea of what kind of technical support you might get from a particular company.

Magazines

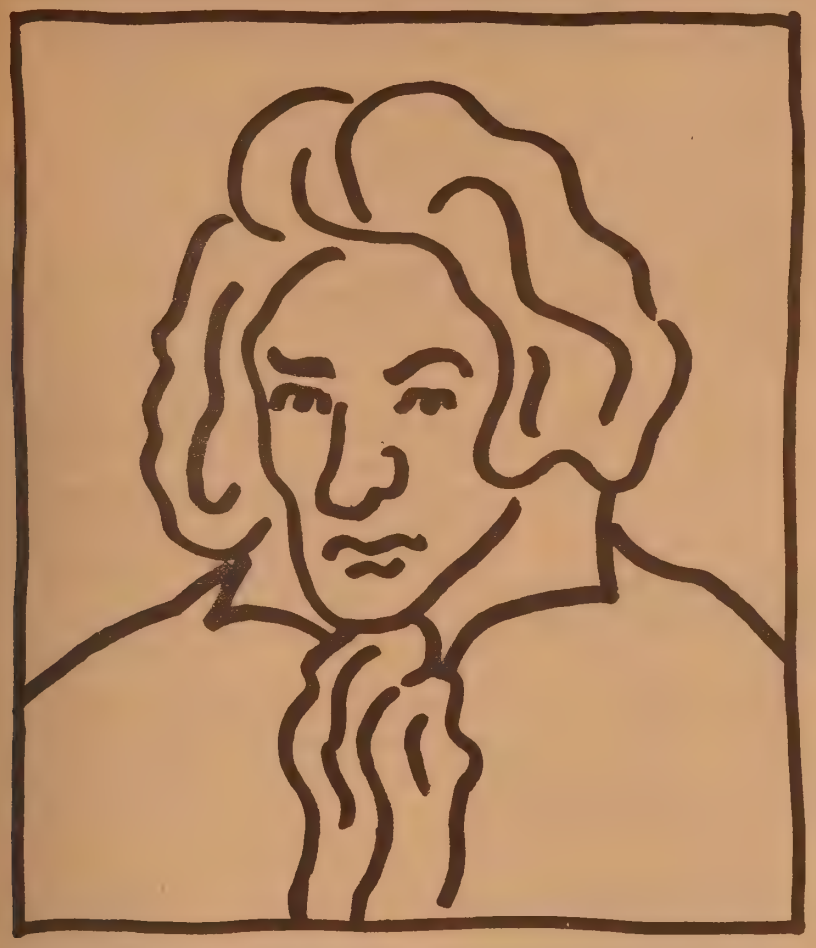
If there isn't a computer club nearby, and if you don't want to spend hundreds of dollars logging into conferencing systems, then subscribe to a magazine. I don't have a favorite Atari magazine at the moment. I normally buy one at a book store or at the dealer's, and I almost never see anything in print that I didn't see on a conferencing system much earlier. But if you find a magazine that you like, then support it by subscribing. A lot of these magazines are struggling to get by, and they make almost nothing on newsstand sales.

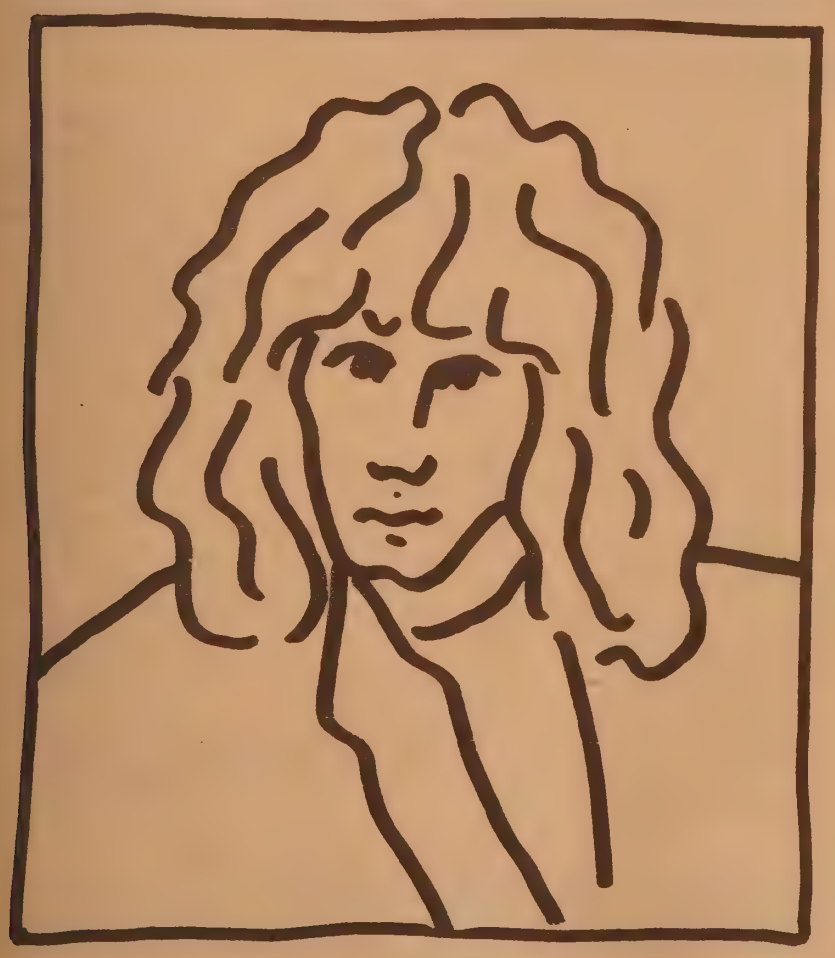
A Separate Problem

A year ago I bought a Supra 30 Mb hard disk. I normally left it on 24 hours a day, and it ran like that for about nine months. Then it started flaking out on me. I would be running a program and it would try to use the disk and would give an error message about that drive not responding. I tried turning the Atari off and back on to see if that would clear up the problem. It didn't.

Then I received a suggestion on USENET to turn the hard disk off and back on and not reset the Atari. That seems to work. As soon as I get my act together then I'll call Supra and will report back here. But if you're having a similar problem with a hard disk, then try turning it off and back on to see if that clears it up. ■

Copyright © 1989 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco both monitors, an Okimate 20 color printer, and disks all over the room.*





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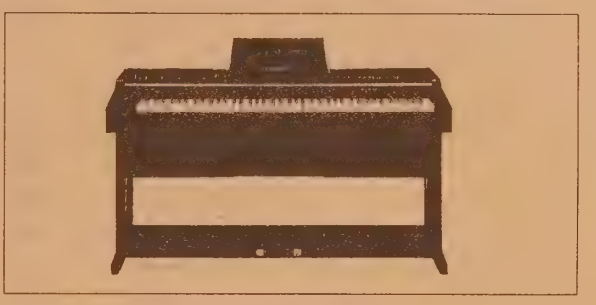

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USER GROUP NETWORK

BY MARY EISENHART

We're hoping to see some of you at the **West Coast Computer Faire**, which starts March 17 at Brooks/Civic in San Francisco and brings a cornucopia of bargains and information to the throngs who attend every year. (Hey, I bought my Mac II there last year, and things certainly haven't been the same since...)

Jan Lewis tells us that she's involved in two *HyperCard*-related sessions at this year's Faire: Friday the 17th at 1 pm she's on a "Pioneers of Hypermedia" panel with **Ted Nelson**, **Doug Engelbart**, **Kristina Hooper** of Apple's Multi-Media Lab, and **Ellen Chait**, late of *HyperAge*. With characteristic restraint, Jan says this is going to be "the hottest event at the WCCF. Period."

But just in case you miss this one, there's more. Jan herself is moderating "*HyperCard* Magic Tricks," a session which takes place on Saturday, March 18 at 2:30 pm. Joining Jan will be *HyperCard* wizards **Amanda (Inigo) Goodenough**, **Ted Kaehler**, and **Robertson Smith**.

And if *HyperCard*'s not your thing, well, check out **Steve Roberts**, whose presentation is "Computing Across America." You may have seen Steve on TV or in an article; he has a specially-equipped, solar-powered computer-on-a-bicycle which he uses to travel the nation's highways and communicate with people on telecomm networks worldwide. Steve and his bike were one of the major hits of last year's **Hackers Conference**, and they're well worth your attention. "Computing Across America" is scheduled for 12 noon on Sunday the 19th.

Don't miss Saturday's 10 am session on "The Impact of Viruses, Worms, and Trojan Horses," chaired by **Michael Odawa** of the Software Development Council and featuring **Peter Neumann** of SRI and **Russell (wuthel) Brand**, computer scientist at Lawrence Livermore and one of the first to spot and vanquish the Internet worm when it turned up on the lab's system.

And Sunday at 2:30, **Jim Warren** himself, the Faire's founder, will look into the future with "Where Do We Go From Here?"

So check it out, and we'll be there checking it out with you.

This seems to be another great month for BBS activity—our mailbox, electronic and otherwise, is full of news about recently-started boards for every interest.

Which leads me to what's becoming an unfortunately recurring theme, brought on by an increased volume of phone calls from irate folks who have unwittingly inherited the number of some defunct BBS whose operator never quite got around to telling us the board was shutting down. Nobody likes having a modem screech at them, and people who don't know what a modem *is* are naturally driven bonkers by phones that ring at all hours and then emit high-pitched squeals at them.

Sure, it's not fun to close down your board. But show a little consideration for the hapless person who's going to be assigned that phone number, probably sooner than you think, and *tell us* when you're closing down, temporarily or permanently.

By the same token, if you encounter a Board That Isn't There in your telecomm travels, please pick up the voice phone (during business hours) and give us a call at (415)652-3810. Tell us the number that doesn't work, and we'll pull the listing. Feel free to use US or email, or the wonders of fax (415/652-4618) to give us similar info. We appreciate your help.

In this vein, we are delighted to announce the return of the **Wyrld Wyrm BBS.** Sysop **Robert Plamandon** has been a real paragon over the years, keeping us up-to-date on moves and occasional suspensions of operation, and now he and his board are back, offering sci-fi, role-playing, and computer games free of charge and registration at (408)263-8134. Wyrld Wyrm operates 24 hours a day at 1200/2400 baud, so check it out and tell Robert hi from us.

The Official APCUG BBS is a new and valuable resource your group might want to explore. APCUG is the **Association of PC User Groups**, and its official BBS went online on February 7. Sponsored by **Borland International**, **Intel**, **Tymnet**, and **Dell Computer**, the board is divided into three sections. Section 1 provides conferencing and email facilities to representatives of member organizations, allowing them to communicate with PC users worldwide, using their local Tymnet node. Section 2 allows user group officers to exchange ideas and newsletters; Section 3 is open to the public and contains forums provided by the board's corporate sponsors. Press releases, product information, and demos will be available for download.

Sponsors expect that more forums and features will be added in time as more users access the system. To log on, call (408)439-9367.

From **David Angell** of Palo Alto comes news of the **MacBooks BBS**, the online version of the computer bookstore. It offers a complete listing of Mac-related books, as well as reviews thereof. This information resource is available free of charge 24 hours a day at (415)969-9337, 1200/2400.

Tané Tachyon of Santa Cruz writes: "Though my BBS has been spinning along for about three years now, I kept putting off sending you a BBS listing because I was going to write a fantastic press release to go with it. Well, I still haven't written that press release, but who knows, *someday* it may appear in your mail."

Well, Tané, I could tell you about the press releases that *do* appear in my mail and why I'm very happy to get nice simple BBS listings instead, but in any case, we're glad you wrote. Because now we can tell the world about the **PYRZQXGL BBS** (not only did Tané not send a press release, she didn't send an explanation of the name either...), which operates 24 hours a day in scenic Santa Cruz at (408)476-4633, 300/1200. The board features over 13 megabytes of ongoing discussion on all subjects, as well as fiction, articles, and journals. The board uses a tree structure and offers email capability to its users. "Hypertext and other buzz words free for the calling!" says Tané.

Leaving the virtual universe for the real-time version, we've got some user group news too. WELLbeing **Ari Davidow** wants interested parties to know that the **Hebrew Users Group** (HUG for short), which has existed mostly in newsletter and electronic form for most of its short life, has taken the major step of starting monthly meetings. These meetings are held on the second Wednesday of the month at turnaround type, 2576 Shattuck Avenue in Berkeley, between Blake and Parker. (The group continues to put out a monthly newsletter and maintains a BBS section and software library on the WELL).

HUG deals with a wide range of questions relating to the use of Hebrew and microcomputers. It's the place to go to discuss the *HyperSeder* stack or the problems of Hebrew word processing on a PC. Dues are $7.50 per year, and if you'd like to join by mail rather than at the meetings, make your check payable to Berkeley Hillel Foundation and send it to 2736 Bancroft Way, Berkeley.

That's about all for now. Please keep the news coming—send US Mail to User Group Network, 5951 Canning Street, Oakland, CA 94609, fax to (415)652-4618, and email to microx on the WELL (415/332-6106) or {pacbell, hplabs, ucbvax, apple}!well!microx from Usenet. ■

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Remote Bulletin Board (Singapore). (065) 445-1646. 9600/2400/1200 24 hrs. 218 MB Online (IBM upload/download). Sysop: Umar A. Rahman

203

Terrapin Station. (203) 656-0134. Grateful Dead Board. Sysop: Klaus and Gretchen Bender.

209

Bertha Board BBS.(209) 239-9853, 300/1200/2400, 8-N-1, 24 hrs. MS-DOS, others. 95 Mb online. Emphasis on programming. Uploads and downloads. No fee but registration required. Sysop: Kenneth Roach.

Oasis Software Library.(209), 823-2803, 300/1200/2400, 8-N-1, 24 hrs. Shareware and PD for IBMs and compatibles. No fee but registration required. Sysop: Tim Campi.

Silicon Realms. (209) 754-5530. 300/(1200 Soon) 9:30AM to 6:30AM.Formerly Motherload 64. Commodore, PET & Plus/4. Programmers board, Continuing & Short Story boards, FRPG. Sysop: Joe Commodore

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212

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213

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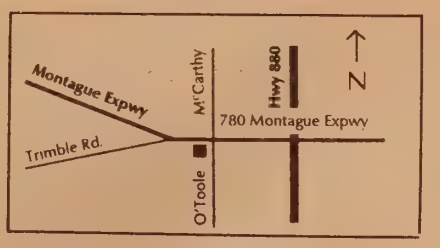

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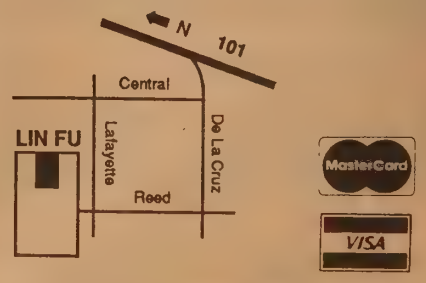

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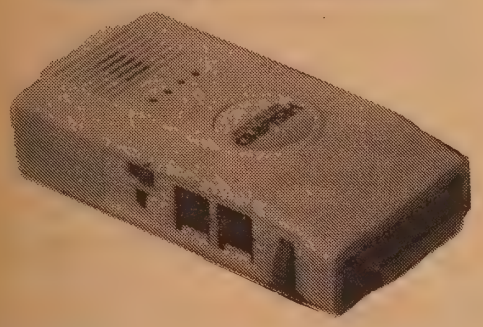

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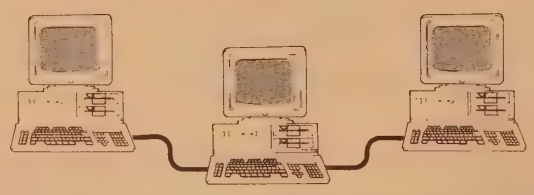

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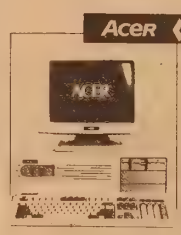

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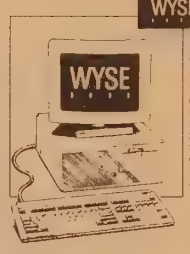

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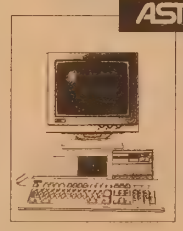

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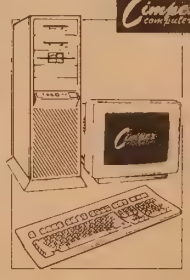

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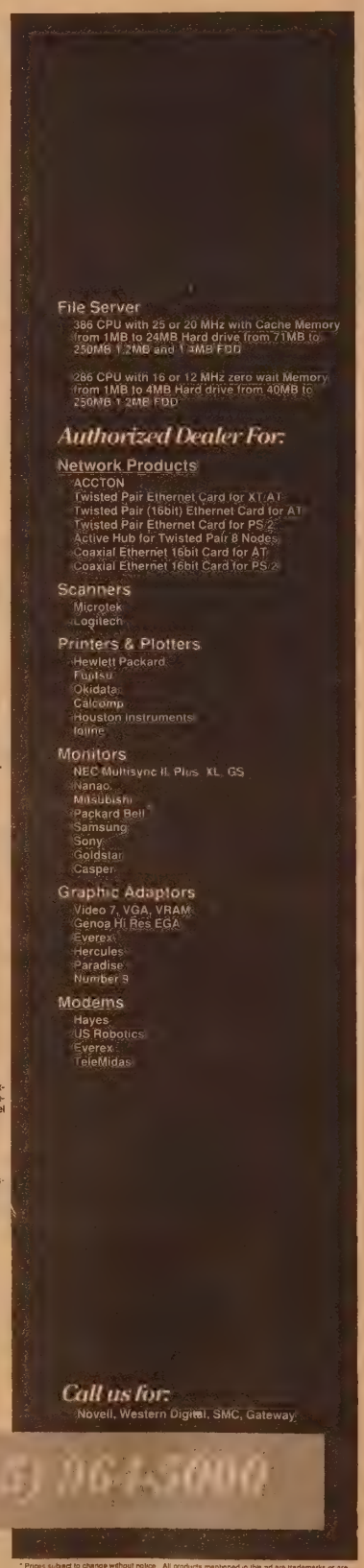

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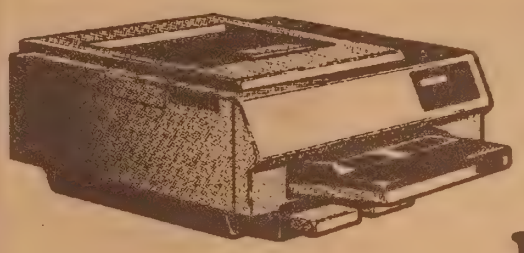

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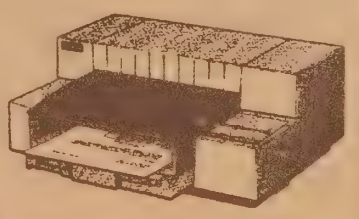

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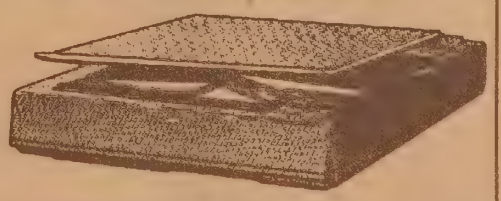

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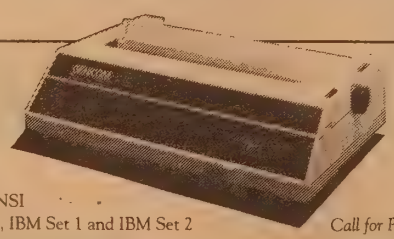

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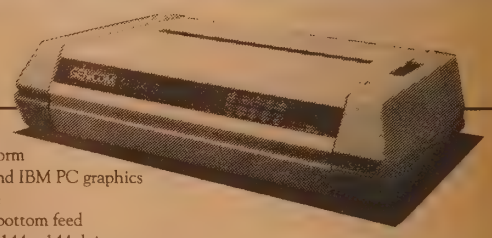

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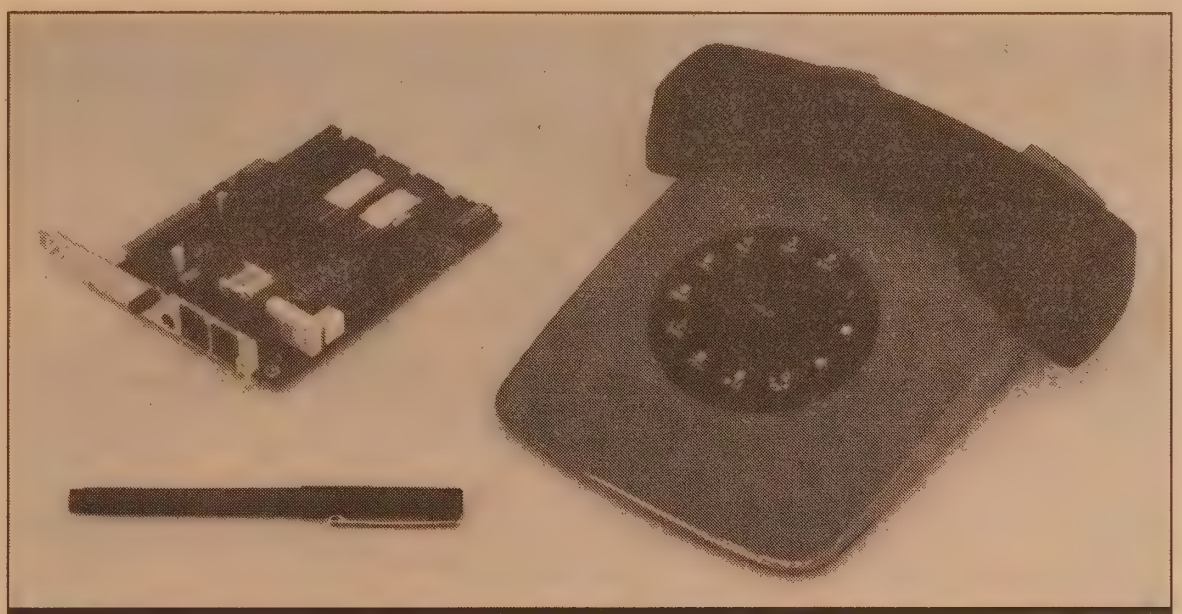

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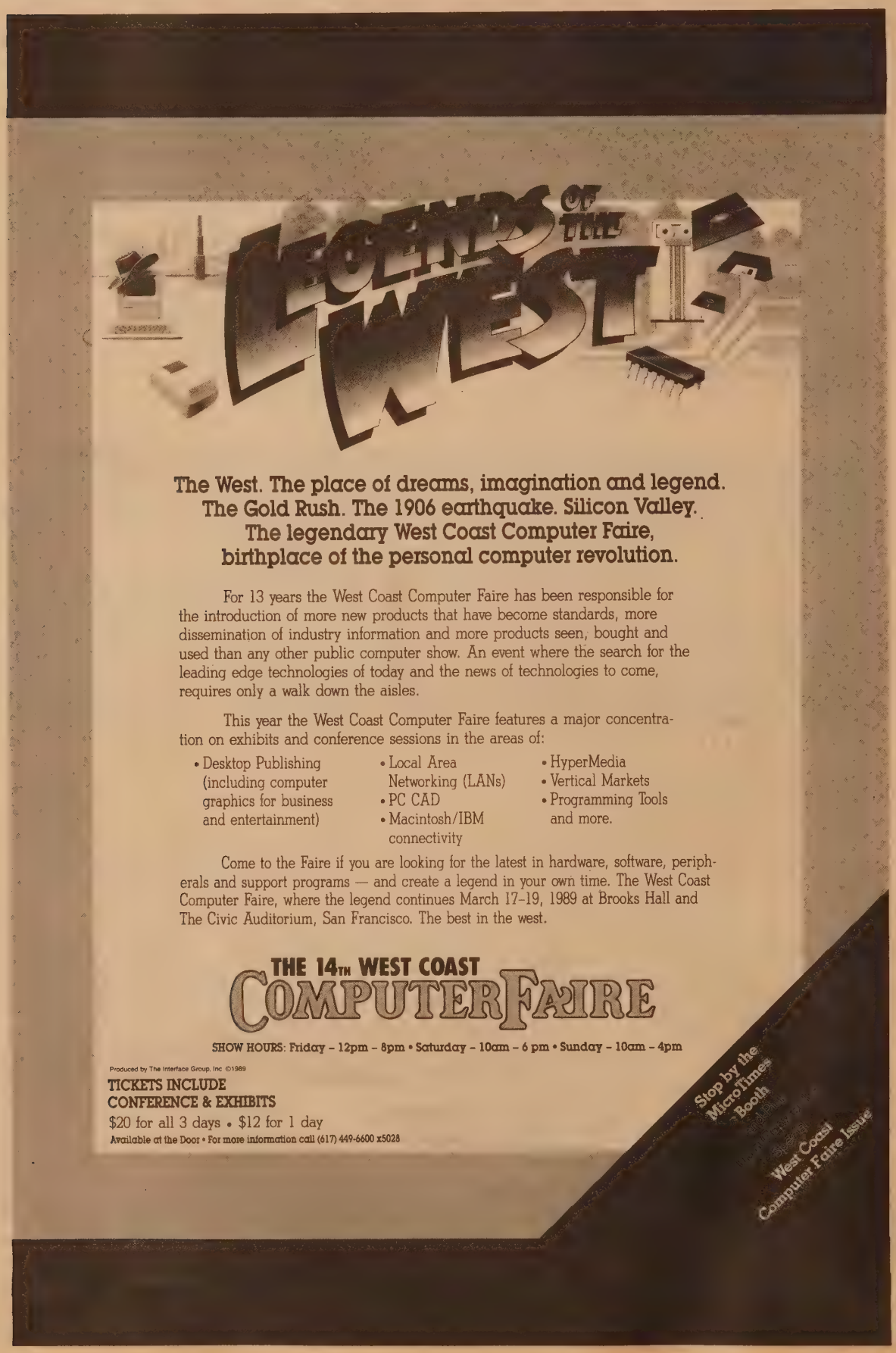
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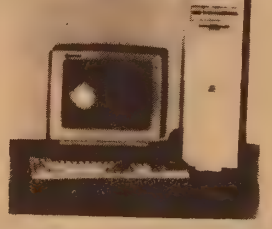

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Dial-Your-Match. (916) 275-1265. Redding. (916) 736-0739. Sacramento.

Hackney's Hideout BBS. (916) 961-1042. 1200/2400 8-N-1. Includes AT&T users conference. Sysop: Rich Hackney.

Night-line Network Central. (916) 331-5043, 300/1200, 8:00 PM to 8:00 AM daily. Forum for individuals, clubs and organizations that want to network nationally with others. Sysop: Eric Thomas.

Phoenix Landing BBS. (916) 966-8243. 300/1200/2400. Macintosh oriented but many other computers are supported. File areas for Mac and other computers. Supports echomail conferences including ECHOMAC and BAYMAC.

ASSOCIATIONS

AI Expert Systems for Business (ESB). Meetings: 1st & 2nd Suns., San Francisco. Business PC expert system solutions. Determine market opportunities, group research projects.

ANImated People User's Group In the spirit of Max Headroom and "Hitchhiker's Guide," we're attempting computer digitization/animation of real-people personalities. San Jose. Call: Tom, (408) 226-9225.

Artificial Intellegence Special Interest Group. Meetings: 2nd Thurs. Engineering 101,Santa Clara University. Independent nationally recognized group studying and developing AI and artificial neural networks. Call Kent Byron (408) 244-8739 for info.

Artificial Intelligence Special Interest Group (AISIG). Call Rita Zokaei, (415) 574-8225.

Association for Women in Computing. Meetings: 1st Wednesday of each month, 6:30 PM, Stagecoach Restaurant, 44 Montgomery St., San Francisco. Call 655-3110 for information.

BAY HPX. Meetings: 2nd Saturday Laptop & handhelds. Call Jim Horn or Michael Felsenstein: (707) 794-3130/(415) 564-8279.

Bay Area CYMA Dealers Association. Meetings: 2nd Tuesdays, Thursdays; 4:30-6:30 pm, San Mateo. Networking and support for McGraw-Hill accounting software consultants and retailers. Call: (415) 345-5955.

Baytalk Computer Users Group. Write: PO 369, Berkeley 94701. BBS: (415) 864-6430, 300/1200, 8-N-1.

Business Computerization User Group. Group forming. Write 6938 Buckingham Blvd., Berkeley, CA 94705, or call (415) 848-2080.

California Genealogical Society Computer Interest Group. Meetings: 2nd Sat.- odd months Genealogical Society Library, San Francisco.

COBOL And SQL Users Club Call: Dr. Badshah K. Mian, (415) 337-1787.

Computer Associates Users Group. Meetings: 3rd Wednesdays, 6:30 pm, 1500 Van Ness Ave., Call: Brenda Goldstein, (415) 864-6770.

Computers & Law Assoc. Meetings: McGeorge School of Law, 3200 Fifth Ave., Sacramento, CA 95817.

CYMA/McGraw-Hill Users Group Meeting. Meetings: Monday, October 24, 3:00-5:00 pm, McGraw-Hill Publications Building, 425 Battery St., San Francisco. Meet CYMA professionals and learn how to get the most from your software. Call: (415) 839-7466.

dbDVLPRS. Meetings: 2240 Buchanan, Ste. 5, San Francisco. Includes dBASE II, III, VI, Clipper, Foxbase, dBXL, Quicksilver and others. Call: Bruce Leandro, (415) 923-0659.

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East Bay User Group. Meetings: 3rd Wednesdays, 7 pm, 12500 Campus Dr., Oakland, Rm R-7, Call: (415) 436-2453.

Entrepreneurial Support Group. CEO. Meetings: SASE, P.O. Box 2781, San Rafael, CA.

Ham Radio Computer Packet Group. Meetings: 2nd Fridays, 8 pm, Salvation Army, 4600 Appian Way, El Sobrante. Learn how to use your computer to broadcast all over the world with the fascinating world of Ham Radio. Call: Bob Fields, (415) 237-3761.

High Tech Gays. Meetings: 2nd Sundays, Part of the National Gay & Lesbian Task Force. Call: (408) 993-3830.

High Technology Entrepreneurial Council. Meetings: Wednesdays, 6:30 pm, Piedmont Community Center, 711 Highland Ave., Piedmont. HTEC is a nonprofit corporation dedicated to providing software developers and other high tech entrepreneurs a forum for developing marketing strategies, building business relationships and exchanging experience and information. Call: Rachel Munoz, (415) 339-3895

MORE: Modemusers Of The Redwood Empire. Meetings: Thurs. July 14; Fri. Aug. 9; 7 PM, Roundtable Pizza, Highway 12 @ Stony Pt. Free membership for modemers who want to get together and talk about local boards. Includes novices to techno-wizards. Call (707) 546-5203.

Mt. Diablo Technology Association. First meeting: Wednesday, Sept. 14. Others monthly at Michael's Restaurant in Walnut Creek. Lunch and evening meetings, send for calendar. Back by popular demand. Will explore common concerns in industry and educational developments. Call: Deborah Scott, (415) 932-4828

Network Users Group (NUG). Next meeting: July 7. Call for location and time. Panel discussion of workgroup software with several major software manufacturers represented. Call (415) 655-6500 for details.

North Bay Users Group (NBUG). Meetings: 2nd Thurs. 7:30-10 PM 201 Maine St., Vallejo, CA. Family Computer Club dedicated to all forms of computing.Determine market opportunities, group research projects. (415) 564-6669.

Nota Bene User Group. Meetings: 3rd Tues. or Thurs., 7:30 PM Berkeley or Peninsula. For location and date, call Thomas Ross, (415) 845-2410.

PASS: Professional Association of Secretarial Services. Meetings: 2nd Saturdays 11:30 AM, Scott's Seafood, Jack London Square, Oakland.Call: Nina Feldman,(415)655-4296.

Prolog Forum. Meetings: Monthly, 2nd Thursday 7:00 PM, Belmont and various locations. Prolog Forum is a group dedicated to supporting users of the Prolog computer language in artificial intelligence. Call Mark A. Epperson at (415) 594-9981.

ProTel (Professionals In Telecommunications) Meetings: Monthly. Holiday Inn, 1221 Chess Drive, Foster City. ProTel is a network organization for people interested in telecommunications.Leave a message at (415) 227-5637 for information.

SEF Marketing SIG. Meetings: Oct. 27—Telemarketing; Nov. 29—Teknowledge, 1850 Embarcadero, Palo Alto. Call: Don Morrison, (415) 8328-0356

SEF OOP SIG. Meeting: Third Tues. 7 pm, Parc Place Systems, 2400 Geng Rd., Palo Alto. Call: Dean Ritz, (415) 859-1043.

SF Robotics Society. Meetings: 2nd Mon. Homestead Savings, Community Hall, 5757 Geary (at 22nd), SF. Guest speaker, developers' roundtable.

Silicon Valley Computer Society. Contact Kent Stafford (408) 286-2969. Or write to 2464 El Camino Real #190, Santa

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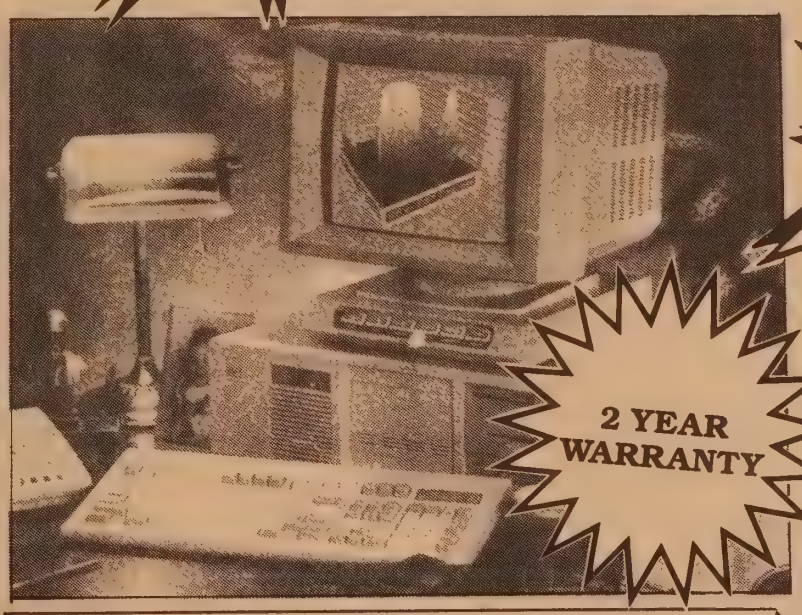

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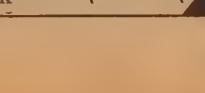

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Society For Technical Communication. Meetings: 2nd Wednesdays, Berkeley. International association of technical writers, editors, illustrators, and instructional designers. Call: Rae Montor, (415) 531-2315.

Software Entrepreneur's Forum (SEF). Meetings: 3rd Thurs. 1875 Embarcadero Rd., Palo Alto. Helps individual software developers and startup software companies. Call for complimentary newsletter. (415) 854-7219.

Technology Executive Roundtable (TER) Meetings: Fourth Tuesdays, 6:00 pm, Santa Clara.Call: Jenny Hoyt,(408)997-1826.

The Hispanic Computing Association. Meetings: 3rd Thursdays, DataDesigns/American Music, 2388 Mission St., SF. Spanish/English Computer Information, PC & Mac presentations and solutions. Call: Juan Lira, (415) 824-8337.

The Society For Technical Communication. Meetings: 1st Wed. 7:00 PM Room #3, SMUD Facilities, corner of Elkhorn and Don Julio, Sacramento. Devoted to the advancement of the theory and practice of technical communication.

Valley of the Moon Users Group. Meetings: 2nd Saturdays monthly, 10:00 AM, Moose Lodge, Sonoma. All systems welcome. BBS, 300 BAUD, 24 hours, (707) 996-7922.

Women's Special Interest Group. 7:30 pm, Hewlett-Packard, 5301 Stevens Creek Blvd., Santa Clara. For all women interested in computing. Call: Rita Zokaei, (415) 574-8225

USER GROUPS

AMIGA

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meetings: 3rd Tues. 7:30 PM Community Room of Homestead Savings & Loan, 999 E. Stanley Blvd., Livermore, CA. Contact Ron Kremkow at (415) 449-1784.

Amiga Addicts Anonymous. Meetings: Newsletter, public domain library, demonstrations. Write PO 4669, Walnut Creek, CA 94596. Call: 689-3453

Amiga East Bay Info Exchange (AEBIE). Meetings: 2nd Tues. 7 to 9 PM 11185 San Pablo Ave., in El Cerrito. Write to P.O. Box 485, Pinole, CA 94564.

ASCITEC: The Amiga Science & Technology Users Group. Meetings: 2nd Thurs. 5-7 PM Lockheed, B/157, Rm. 4-C, Sunnyvale, CA. Scientific/Video Applications. Classes available.

AUGment - Amiga Users Group of Silicon Valley. Meetings: 2nd Fri. Write to P.O. Box 1863, Fremont CA 94538 for more info.

Bay Area Amiga Developers Group (BADGE). Meetings: 3rd Thurs. 8 PM Turing Auditorium, Stanford University, Stanford, CA. For all Amiga programmers. No membership fee.

CWEST Bay Area Commodore Users Group. Meetings: Third Thursdays, 7:00 PM, EFort Mason, Bldg. C, Rm. 215. Support C-64/128 and Amiga. New Users welcome. Write PO 146731, San Francisco, CA 94114-6731.

Northern California Amiga Club. Meetings: Second Saturdays, 2 pm, Rico's. Supports Amiga. Write: PO 54, Bella Vista, CA 96008.

SMAUG (Salinas-Monterey Amiga Users Group). Meetings: 3rd Tues. at 7 PM, Seaside Library, 550 Harcourt Ave., Seaside, CA. Write PO 776, Castroville, CA 95012 for call Richard Binsacca at (408) 678-2518.

SVAUG-Scotts Valley Amiga Users Group. Meetings: 2nd Thursday, 7:00 PM. The Computer Room, Kings Village, Scotts Valley.

Vallejo AMiga People (VAMP). Meetings: 2nd Tues. 6:30 PM Software 1st, Vallejo Corners Shopping Center. Contact Bill Braun at (707) 554-0263.

AMSTRAD

North American Amstrad Users Group (NAAUG). National User group. For info send S.A.S.E. to NAAUG, P.O. Box 2178, Ferndale, WA 98240.

APL

APL Bay Area Users' Group. Meetings: 2nd Monday, 6:30 PM, I.P. Associates, 425 Sherman Ave., Suite 200, Palo Alto.

APPLE

A.P.P.L.E. Co-op. Meetings: National User Group. Call-A.P.P.L.E. Magazine. Write: 290 S.W. 43rd Street, Renton, WA 98055. Or call (206) 251-5222 for more info.

Apple Pickers of the Redwood Empire. Meetings: 2nd Sat. 10 AM Santa Rosa JC, Shuhaw Hall, Rm. 1735. Call for sample newsletter. (707) 763-8322.

B.E.A.R. Apple II National Users Group. Meetings: send S.A.S.E. to B.E.A.R., 4719 Meridean Ave. #401,San Jose 95118. Printshop & Appleworks files, monthly newsletter.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

GravenStein Apple IIGS Users Group. Meetings: 3rd Saturdays, 10:00 AM, Coddingtown Mall, Santa Rosa. User group to explore new and existing programs and uses for the IIGS, to order equipment and material as a group for quantity discounts and to encourage the use and development of the IIGS among current, new and potential users. Call: Aaron Lamar, president, 938-8479.

San Francisco Apple Core. Meetings: 3rd Saturdays, 10 am, Daly City Library, 40 Wembley. BBS, SIGS, PD/SW library, Help List, Newsletter, more. Call: 398-2335/771-5830.

San Leandro Apple User Group. Meetings: 1st Thursdays, San Leandro HS, Rm. 213. New owners to experienced users welcome. AppleWorks, software and telecommunications SIGs meet monthly. Call: (415) 483-6046.

Society For The Prevention Of Cruelty To Apples. Meetings: 2cnd Wednesdays, 7:30 pm, Fremont Main Library, 39770 Paseo Padre Pkwy. Call: Dean Fern, (415) 537-3439.

Tri Valley Apple II Users Group. Meetings: 1st Thurs. 6:30 PM. Call Esther Farnstrom at (415) 829-3672 or Dan Balsey at (415) 828-6237 for meeting location.

ATARI

ABACUS (Atari Bay Area Computer Users Society). Meetings: 1st Saturdays, 19th Ave. Diner, 19th & Lincoln Aves., SF. Open to all Atari XL/XE and ST users. $20/yr. Call: (415) 753-8483.

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon. 7:00 PM Bracher School, corner of Bowers and Chromite, Santa Clara. ST users meet at Bracher on 2nd Tuesdays. 8-bit users meet at H-P, Wolf and Pruneridge, Cupertino. BBS: (408) 247-1257.

COAST (California Original Atari ST Users Group). Meetings: 3rd Wednesdays, 7 pm, 2105 Bancroft, Berkeley. Call: (415) 945-1949.

San Leandro Computer Club. Meetings: 1st Tuesdays, 8 pm, San Leandro Community Library. BBS's: (415) 352-58118 & 7887-2008.

AT&T

Bay Area AT&T PC Users Group - South Bay. Meetings: 2nd Wed. 6:30 PM AT&T Bldg., 1090 E. Duane, Sunnyvale, CA. Call: Joe Lipsig (408) 733-6522. BBS: (408) 462-6329.

Bay Area AT&T PC Users Group. Meetings: 1st Wed. 6:30 PM Alternates between Oak. & SF, Call: Joe Mahoney (415) 586-8376. BBS: (415) 829-6027.

AUTOCAD

San Francisco/Marin AutoCAD Users Group. Meetings: 2nd Tuesday evenings. $20 annual membership fee & newsletter. For further info, call Volker, 331-9466, or Virginia 777-4025.

Sonoma County AutoCAD Users Group. Call (415) 777-9144 for info.

BLIND USERS GROUP

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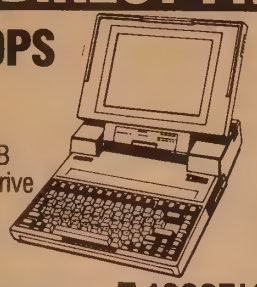

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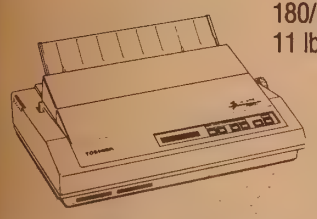

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Commodore 64 Software Users Group For New Commodore Owners. One-on-one help for new owners. Meeting place & time TBA by members. Call (714) 531-2977 for info.

Commodore 64/128 User Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $10/yr. Vincent Poy, c/o Commodore Users Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

Commodore Connection Users Group. BBS (415) 458-1005.

Commodore Users Group Santa Cruz. Meetings: 3rd Wednesdays, 2395 Delaware Ave., Santa Cruz. Call: Ruth Wieland, (408) 688-2843.

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CWEST Bay Area Commodore User Group. Meetings: 3rd Thurs. Fort Mason, Bldg. C, Rm. 215.Supports C-64/128, Amiga. Write P.O. Box 146731, San Francisco, CA 94114-6731.

Diablo Valley CUG. Meetings: 2nd Thurs. 7:30 1331 Concord Ave. For info write: Box 27155, Concord, CA 94527. Or call (415) 932-2413.

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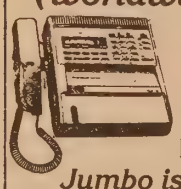

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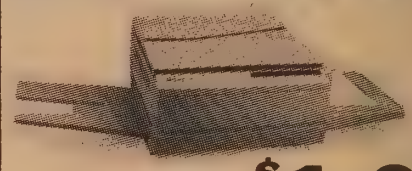

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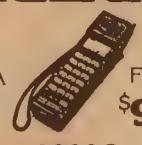

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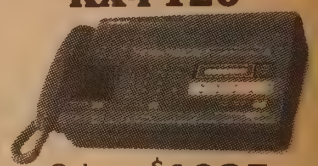

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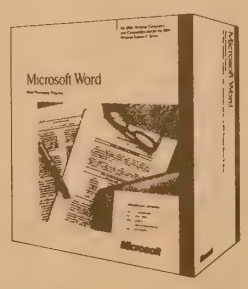

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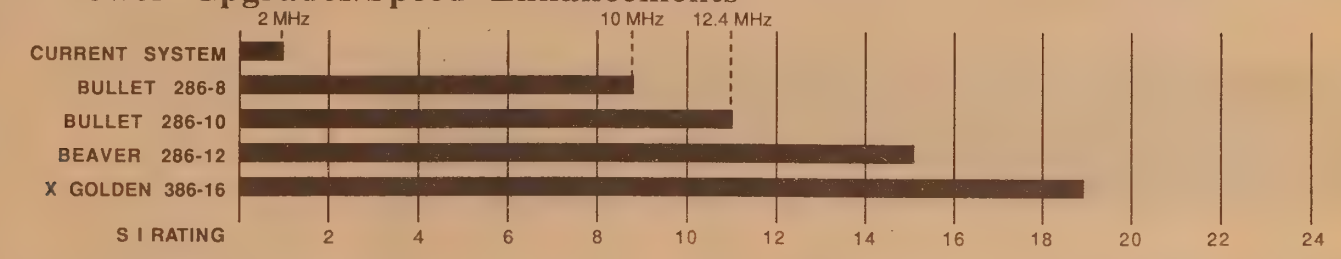

PC and XT owners may now match the speed of AT systems easily and affordably. The BULLET 286 Motherboard from CDS is the price performance leader starting at just **$195.**

As a direct replacement for the IBM-XT 8088-based system board, **the BULLET 286 Motherboard is 100% software and hardware compatible.** This Board has an 8 MHz 80286 CPU and up to 1 MB of zero wait on-board RAM which allows for maximum AT power with **existing** 150 ns DRAM.

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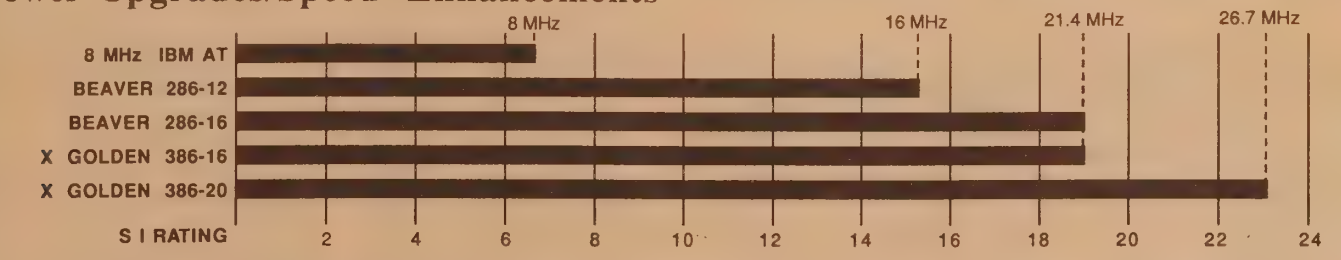
Baby AT and XT upgrades are affordable with our performance upgrade kits and give full 16 bit I/O capabilities. These boards are the AT upgrade solution. **CDS can provide any upgrade products you need.**

AT Power Upgrades/Speed Enhancements



AT owners can enjoy higher 286 or 386 performance levels at a much lower cost than replacement with new machines. Get the increased memory capacity and speed you need by plugging in a CDS replacement motherboard. Call for more information.

CDS Power Upgrades

	BULLET 286-8*	BULLET 286-10	BEAVER 286-12	BEAVER 286-16	X GOLDEN X386-16	X GOLDEN X386-20	X GOLDEN X386-25	MYLEX XT386-16	MYLEX XT386-20
CPU	80286-8	80286-8/10	80286-10/12	80286-16	80386-16	80386-16/20	80386-20/25	80386-16	80386-20
CO-PROCESSOR	80287-6/8	80287-8/10	80287-10	80287-10	80287-10 OR 80387	80287 OR 80387	80287 OR 80387	80387	80387
CACHE RAM	N	N	N	N	N	N	N	64K	64K
DRAM TYPE	64K/256	64K/256	64K/256	64K/256	SIM/DIP 256/1M	SIM/DIP 256/1M	SIM/DIP 256/1M	DIP 256/1M	DIP 256/1M
MEMORY SPEED (0WS)	150ns	120ns	100ns	70ns	120ns	100ns	80ns	120ns	100ns
MEMORY CONFIGURATION	256/512 640/1M	256/512 640/1M	512 640/1M	512 640/1M	1/2/4 8 MEG	1/2/4 8 MEG	1/2/4 8 MEG	1/2/6 10 MEG	1/2/6 10 MEG
8 BIT SLOTS	8	8	2	2	1	1	1	1	1
16 BIT AT SLOTS	—	—	6	6	5	5	5	4	4
32 BIT MEM SLOTS	—	—	—	—	2	2	2	1	1
BIOS	Quadtel Award	Quadtel Award	AMI	AMI	AMI	AMI	AMI	AMI/Award Phoenix	AMI/Award Phoenix
SYSTEM INFO RATE	8.6	11.0	15.3	18.7	18.7	23	28	18.7	24.4
RELATIVE SPEED	10	12.1	16	21.4	21.4	26.7	34.5	23.2	29.6
PRICE w/o MEMORY	**$195**	**$225**	**$249**	**$349**	**$795**	**$899**	**$1199**	**$999**	**$1516**

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Beginners SIG/SFPCUG. Meetings:3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: (415) 211-9166.

Berkeley PC/Compatible User Group. Meetings: 2cnd Mondays, 7:00 pm, 2618 Telegraph Ave., Berkeley. No fee, bulletin board, public domain library. Call: Mel, (415) 526-4033.

C Language SIG/SFPCUG. Meetings: 2nd. Mondays, 7 pm, Kam's Rest., 2068 Center St., Berkeley. Call: Debbie Norling, (415) 644-1855.

Clipper SIG/SFPCUG. Meetings: 4th Mondays, 7 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: Michael Palladino, (415) 751-2719.

Columbia SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Dennis Tye. (415) 566-0587.

CUE Club. MS-DOS machines. SIGs for other computers. BBS:(209) 239-9853. For more info call (209) 858-4401.

DataPerfect SIG/SFPCUG. Meetings: 2nd Mondays, 7 pm, Kam's Restaurant, 2068 Center St., Berkeley. Call: Christy Quinn (415) 644-1855.

dBase SIG/SFPCUG. Meetings: 3rd Thursdays, 7:30 pm, 6 No. San Pedro Rd., San Rafael. Call: John Stephenson, (415) 488-0342.

Desktop Publishing SIG/SFPCUG. Meetings: 4th Tuesdays, 7:30 pm, 179 Parnassus Ave., SF. Call: Phil Smith, (415) 566-3648.

Diablo Valley PC Users Group. Meetings: Walnut Creek, CA. Write: P.O. Box 8040, #117, Walnut Creek, CA 94596.

East Bay Fog. Meetings: Monthly meetings, Apostleship of the Sea, 600 Terminal St., Oakland. Newsletter, BBS. Call (415) 272-9099 for more info.

Enable SIG/SFPCUG. Meetings: 2nd Wednesdays, 7:30 pm, Walnut Creek. Call: Sandi Baker, (415) 946-1716.

Financial SW SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: Nick Maffei, (415) 668-2456.

FUNHUG—PC. Meetings: 3rd Wednesdays, 7:30 pm, Fremont Library, 39770 Paseo Padre Parkway, Fremont, in the Meeting Room. Mainly just the MS and PC DOS world. Send SASE to Russ Fischer, 2792 Arlington Place, Fremont 94555.

IBM & Compatibles Users Group (ICUG). Meetings: A mail-based user group with possible meetings. Not for PCjrs. $8/yr. Write: Dan Tuma, 30 Arjang Ct., Alamo, CA 94507-2041.

IBM Compatible Users Group. Meetings: monthly, call (415) 969-6916 for info 7-10 PM.

IBM PC & Compatibles Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $10/yr. Vincent Poy, c/o IBM PC & Compatibles User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

IBM PC Users' Group Of The Redwoods (PCUGR). Meetings: 2nd Thursdays, 7 pm, Santa Rosa Vets Memorial, East Dining Rm. Newsletter, BBS, public domain & shareware disk library, $25/yr. Call: (707) 527-USER.

IBM Technical SIG/SEF. Teknowledge. Call for dates and time. Call: Mike Schmit, 244-6826.

Kay+Fun Peninsula Computer Club. Meetings: 2nd Thursdays, 7:30 PM. Social Room, 222 Laurel St., San Carlos. CP/M + DOS library. BBS: (415) 572-8219.wCall: 593-9981.

Lotus SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Jerry Stern, (415) 282-4100.

Marin-Sonoma PC Users Group (MSPCUG). Meetings: Last Tuesdays, Tamalpais Ave. & 3rd Ave., San Rafael Whistlestop Bldg. Call: (415) HAWK.

Mid-Peninsula IBM-Club. For IBM employees only. Call Scott Maiden for info: (415) 855-4509.

Modula-2 SIG/SFPCUG. Meetings: 3rd Thursdays, 7:30 pm, Call: Richard Lesnick, (415) 398-3587.

NewViews SIG/SFPCUG. Meetings: 4th Mondays, 7 pm, 179 Parnassus Ave., SF. Call: G. Watson, (415) 398-3587.

OtherPerfect SIG/SFPCUG. Meetings: 2nd Mondays, 7 pm, Kam's Restaurant, 2068 Center St., Berkeley. Call: Quisty Quinn, (415) 644-1855.

Paradox SIG/SFPCUG. Meetings: 4th Wednesdays. Call: Allen Greenkey. (415) 621-8478.

PC Clubhouse. Meetings: 1st Fridays, 8 pm, Cal State Hayward, Rm. 2078, Heiklejohn Hall. 2000 disk public library, expert help, software/hardware demos, $24/yr. Call: (415) 538-2449 or 846-3575.

PC UNIX SIG. Meetings: 1st Wednesdays, 7 pm, AT&T Training Center, 1090 E. Duane Ave., Sunnyvale. Learn more about such UNIX versions as Microport, XENIX and Minix. Starting a library of public domain source code. Call: Dan Kionka, (408) 432-1300.

Sacramento PC User Group. Meetings: For information call Jackie Janssen at (916) 383-6900. ,8-N-1.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

San Francisco PC Users Group. Meetings: 3rd Mondays, 8 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: (415) 221-9166. BBS: (415) 621-2609.

San Francisco PCjr Users Group (SFPCjrUG). Meetings: First Sundays. 7:30 PM, Homestead Savings, 22nd Ave./ Geary, San Francisco. Demonstrations and discussions, club library, disks for sale. Call: John King, 472-7035

Santa Cruz Computer Society. Meetings: 3rd Thursdays. 7 PM, Santa Cruz County Office of Education, 809 Bay Avenue, Suite H, Capitola. Call: 479-1180.

Silicon Valley Computer Society. Meetings: 4th Wed. 7:30 PM Oak Room, at Hewlett Packard, on Pruneridge in Cupertino. Call Kent Stafford for info at (408) 286-2969.

Silicon Valley FOG. Meetings: 3rd. Wed. 7:30 PM Saratoga Community Library, 13650 Saratoga Ave.

Solano Community PC Users Group. Meetings: 3rd Monday, 7 PM, Fairfield High School.

Solomon User Group Of Silicon Valley. Meetings: Wednesday, August 10, 6:30 PM, Conveyor And Storage Dynamics, 2581 Leghorn St., Mt. View. Call Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark, CA 94560; (415) 659-1515.

South Bay AT&T PC UG. Meetings: Call for info. Call (408) 226-0116

South Bay WordPerfect User Group. Meetings: Monthly, 13650 Saratoga Ave., Saratoga. Call: Martin Van Derpool, (408) 238-8434.

South County PC Users Group. Meetings: Round Table Pizza Restaurant, 22457 Foothill Blvd., Hayward. Call: R.A.McCloud, (415) 537-9899.

Teachers SIG/SFPCUG. Meetings: 3rd Mondays, 7:30 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Margaret Gwathmey, (415) 982-4221.

TRS Nybblers. Meetings: 2nd Friday, 8 PM, Chabot College, 2555 Hesperian Blvd., Rm. 600, Hayward. MS/DOS, CP/M, laptops, CoCo's, Mod 1, 3, 4; Mod 2, 12, 16, 6000. PD software education modules, problem solving committee.

Valley Computer Club IBM PC Users Group. Meetings: 3rd Wed. 6 PM Xerox Bldg. 475 Oakmead Pky, Sunnyvale, CA. $24/yr member. Monthly VPUG News, access rights to VPUG-SIG Advice on desktop pub. techniques, new products, bugs, etc.

WordPerfect SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Debbie Foster, (415) 285-4534.

KAYPRO

BAKUP. Meetings: 3rd Tuesdays, 7:30 pm, Albany Senior Center, 846 Masonic Ave., Albany. Call: Bob Athey, (415) 526-3541.

Kay+Fun Peninsula Computer Club. Meetings: 7:30 PM, Social Room, 222 Laurel St., San Carlos. CP/M + DOS library. BBS: (415) 572-8219. Call: 593-9981.

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San Francisco Computer Society. Meetings: 1st Monday, 7:00 PM, Homestead S&L, 5757 Geary Blvd., San Francisco CP\M and DOS machines. No BBS. Call Ralph Gallagher, (415) 929-0252 for information.

MACINTOSH

Bay Area MacForum. Meetings: 3rd Saturdays, noon, Daly City Library, 40 Wembeley. BBS, SIGS, PD/SW library, Help List, Newsletter, Newcomers Meeting, more. Call: (415) 771-5830/ 398-2335.

Berkeley Macintosh User Group (BMUG). Meetings: every Thurs. 6 PM Physical Sciences Lecture Hall, UC Berkeley Campus. SIG meetings on Mondays, Tuesdays & Wednesdays. Call for this week's topic. (415) 849-9114. BMUG, 1442A Walnut St., #62, Berkeley, CA 94709.

Christian Macintosh User Group, San Francisco Chapter. Meetings: 2nd Thurs. San Francisco. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913. Bible Study and DTP SIGS.

Christian Macintosh User Group, Silicon Valley Chapter. Meetings: 1st Thurs. San Jose. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913.

Desktop Publishing SIG/ GMUG. Meetings: 1st Tuesdays, 7 pm, San Francisco Business Times Building, 325 Fifth St., San Francisco. Call: 641-GMUG

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

EBMUG (East Bay Macintosh Users Group). Meetings: 3rd Tuesdays, 7:30 pm, 724 Allston Way (@4th) near University Ave., Berkeley. Members receive free PD software. Bring blank disk. Meetings open to everyone. Call: Terry Pennington, (415) 486-0147.

GMUG (San Francisco's Macintosh User Group for Gays and Lesbians). Meetings: 3rd Wednesdays, 7 pm, UC-Berkeley Extension Annex, 1930 Market St., Rm., #2G. Call: 641-GMUG

HyperCard SIG/GMUG. Meetings: 7 pm, 78 A Mars St., San Francisco. Call: 641-GMUG

Mac Diablo Users Group (MDUG). Meetings: 3rd Tues., Community Room, Glendale Federal Savings, 3101 Crow Canyon Road, San Ramon.

MacCruisers — Santa Cruz. Meetings: 2nd Wed. Jade Street Community Ctr. at 45th Ave., Capitola, CA.

Macintosh SIG/SEF. Apple Cafeteria. Call for dates and time. Tony Meadow, 644-9400.

Macintosh Users Of ComputerWare (MUCoW). Meetings: 2cnd & 4th Wednesdays, 7:00 pm, Above ComputerWare store, 490 California Ave., Palo Alto. Call: (415) 496-1051 or 496-1033.

MacNexus — Sacramento's Macintosh Users Group. Meetings: 3rd Thurs. 6:30 PM Call (916) 446-2411 for info. 350 members, but still informal. Extensive public domain collection.

Macs Of Marin (MOM). Meetings: 2nd Thursdays, 7 pm, Redwood High School, 395 Doherty, Larkspur. Call: Steve Salzman, 459-5707.

Silicon Valley Computer Society's Macintosh SIG. First meeting: September 21, 7:30 pm, 6th floor offices of Arthur Young and Co., Mitsubishi/Plaza Bank Building, 55 Almaden Blvd., San Jose. A forum for shared ideas. First meeting will be a demonstration of HyperCard. Other demos are planned for future meetings. Call: Dennis Dawson, (408) 947-5550.

Stanford Macintosh Users' Group (SMUG). Stanford community membership: $25; public membership: $35 per year. Call: 723-SMUG. BBS: (415) 723-7685.

TI-West Meetings: 2nd Fri. 8 PM Chabot College, Rm. 600, 25555 Hesperian Blvd., Hayward, CA. Access to a variety of pub. domain software, education modules "problem solving" peripheral committee.

Tri-Valley Macintosh User's Group (TMUG). Meetings: 1st Thursdays, 7 pm, 4695 Chabot Dr., Rm 114, Hacienda Business Park, Pleasanton. Newsletter, large P/D library. Call: James (415) 426-8756 eves, Mike, (415) 838-6165.

MICROSOFT

Mac Diablo Users Group (MDUG). Meetings: 3rd Tuesday, 7:30 PM, Community Room, Glendale Federal Savings, 3101 E. Crow Canyon Rd., San Ramon. Small, helpful group.

Microsoft Flight Simulator Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $15/yr. Vincent Poy, c/o Microsoft Flight Simulator User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

Microsoft Word Users Group. Meetings: 4th Mondays, 7:30 PM - 9:30 PM, Hewlett Packard-Cupertino-Oak Room Bldg., 48 Pruneridge, 100 yds. est of Wolfe off Hwy 280. August 22: Chris Donner, Pres. Access Softek on DRAGNET for Text Retrieval and Management. Call: Bill West, 356-8805.

Mirosoft Word SIG of the SVCS. Meetings: 4th Mon. 7:30 PM Hewlett—Packard, Oak Room, Pruneridge at Wolfe, Cupertino. Contact Bill West (408) 356-8805 or Hunter Jackson (4080 446- 4097.

MIDI

MIDICRUZ Computer and Music Users. Meetings: 1st Thurs., 7:30 PM, 200 Seventh Ave., Suite 225, Santa Cruz, CA 95062. Contact Robert at (408) 476-8464.

Silicon Valley Techno—Musicians Network. Computers, MIDI, electronic/ computer music, home studios, all experience levels, all computers, all musical styles welcome. Call: Bob, (408) 733-3429.

MINDSET

San Francisco Mindset Users Group. Call: (415) 626-4240.

MORROW

BAMDUA (Bay Area Micro Decision Users Assoc.). Meetings: 3rd Tues. 7:30 PM Albany Senior Center,846 Masonic Street (just north of Solano) in Albany, CA. Voice:(415) 534-4257. BBS:(415) 654-3882. P.O. Box 5152 Berkeley CA 94705.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

NEC

Bay Area NEC/100 Users Group. Meetings: 1st and 3rd Thur. 7:30 PM Room 209C at College of Alameda. For those interested in laptops, especially Kyocera 80C85 type (NEC 8201a, Radio Shack Model 100 or 102. Call (415) 658-1889.

NOVELL

Novell Users Group. Meetings: Third Wednesdays, 6:30 pm, Coco's restaurant, 1305 South Mary, Sunnyvale. Newsletter, bulletin board, product demos, assistance for beginners. Call: Bill Strouse, 998-8821.

ORACLE

Northern California Oracle UG. Meetings: Call (408) 738- 8330 for info. Meets every 3 months at different Bay Area locations. Newsletter published between meetings.

OSBORNE

San Francisco Computer Society. Meetings: 1st Monday, 7:00 PM, Homestead S&L, 5757 Geary Blvd., San Francisco. CP\M and DOS machines. No BBS. Call Ralph Gallagher, (415) 929-0252 for information.

PARADOX

San Francisco Paradox Users Group. Meetings: 3rd Wednesday, call Jeffrey Edwards Co. for information, (415) 543-6227.

San Francisco Paradox Users Group, South Bay Chapter. Meetings: 3rd Tuesday, call Jeffrey Edwards Co. for information, (415) 543-6227.

REVELATION

Bay Area Revelation UG. Meetings: 1st Tues. Call (415) 759-1210.

SANYO

Sanyo PC Hackers. Meetings: 1st Wed. 7 PM Mercury Room, Mercury Savings & Loan, 99 El Camino Real, Menlo Park.

SOLOMON

San Francisco Solomon III Users Group. Meetings: I Third Wed.,odd months 6-9 PM Price Waterhouse, 555 California St. 36th Fl., San Francisco. Annual membership - $50; corp. membership - $75.

Solomon User Group of Silicon Valley. Meetings: For info contact Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark CA 94560.

S—100

S—100 Business Users Group. Meetings: 4th Tues. 7:30 PM Santa Clara Univ., Rm. 101, Bannan Engineering Bldg. CP/M & MS-DOS libraries. BBS: (408) 262-5150, 8-N-1,2400/1200/ 300.

TANDY/RADIO SHACK

BYTE Bandits of America. Meetings: Campbell. Call (408) 379-2774 for info.

CoCoByte. Meetings: Last Saturdays, 2 pm-4 pm. Supporting the Tandy Color Computer 11,2 or 3 with Spanish, English & French software. Write to: CoCoByte, c/o Fabian Rodriguez, A.A. 5976, Cali-COLOMBIA.

Model 100, 102 & 200 Support. Meetings: Int'l support by mail, voice & BBS. Free on-line weekly news letter. Write Club 100 984 Hawthorne Dr., Walnut Creek, CA 94596. Or call (415) 937-5039.

Tandy 1000 (The Mug). Mail-based user group w/ monthly newsletter. Not for PC jrs. Members communicate through newsletter. $8/yr. fee; checks to: Daniel Tuma, 30 Arjang Ct., Alamo, CA 94507-2041.

Tandy 1000, 3000, 4000, And 5000 Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $10/yr. Vincent Poy, c/o Tandy 1000, 3000, 4000, And 5000 User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

TELEBIT

Telebit Trailblazer Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $16/yr. Vincent Poy, c/o Telebit Trailblazer, And 5000 User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

TEXAS INSTRUMENTS

Bay Cities User Group. Meetings: 1st, 3rd, 5th Wednesdays, 7:30 pm, 1637 Morgan, Mt. View. Call: Jack, (415) 964-4344.

Brea 99'ers Users Group. Meetings: 1st Mon. 7:30 PM Mercury Savings, La Habra, CA.

San Francisco 99ers. Meetings: 3rd Saturdays, 3751 Elston Ave. Call: Fred, (415) 530-8335.

Thousand Oaks Personal Computer Club (TOPCC). Meetings: monthly. Call: (714) 686-0336.

TIMEX/SINCLAIR

Timex Sinclair East Bay Z80 Users Group (TSEBZUG). John Ezike, (415) 843-5507.

Timex Sinclair Peninsula Users Group (TSPUG). Contact George Mockridge, (408) 878-1773.

Timex/Sinclair Users of Silicon Valley (GUTS/SV). Meetings: each Sat. 9 AM Stanford Univ., Jordan Hall (quadrangle), Math Bldg. RM 380C. SW library & newsletter. For topic check PDSE BBS in Sunnyvale (408) 735-7390, 300/1200, 8-N-1, 24 hrs.

UNIFY

Unify Users Group. Information exchange, presentations and problem solving related to Unify products. Email distribution is available for those connected to USENTE or UUCP mail at UUg-dist@mrspoc. Call: Steven List 961-6112.

UNIX

SVNet. UNIX User Group. UNIX Meetings: 3rd Tuesdays, 10500 DeAnza, Cupertino. Talks on UNIX topics, books, and reviews. Call: Ralph Barker, (408) 248-8649.

VENTURA PUBLISHER

San Mateo Ventura Users' Group. Meetings: 2nd Mondays, 7:00-9:30 pm, 619 Bradford, Redwood City. Workshops, lectures, demonstrations of new techniques, shortcuts. Call: Eleanor Church, (415) 726-3181.

Ventura Desktop Publishing Users Group. Meeting: 1st Tuesday, 7-9:00 pm, 1650 S. Amphlett Blvd., San Mateo. Newly formed group. Call Eleanor Church at (415) 726-3181, or Pam Sheble at (415) 574-2003 for information.

VPUG (Ventura Publisher User Group) Meetings: 3rd Mon. 6:30 pm Fort Mason, Bldg. A., Rm. 5 San Francisco, CA

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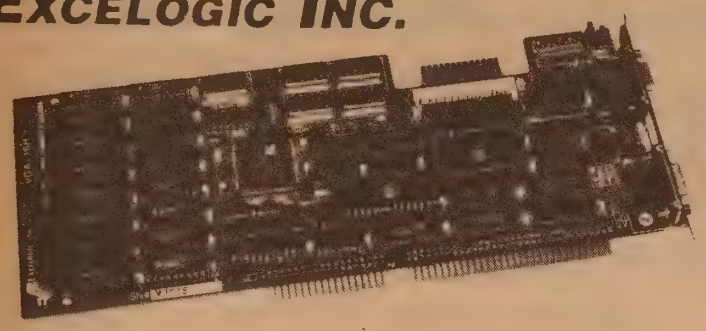

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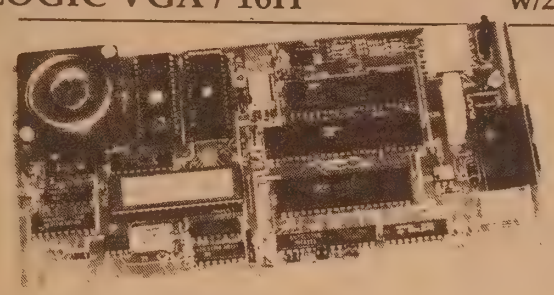

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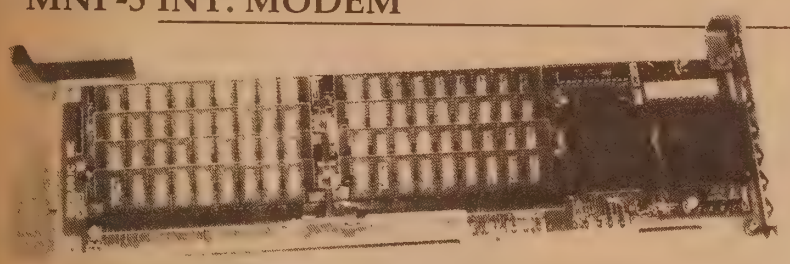

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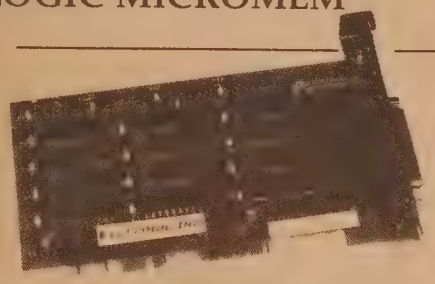

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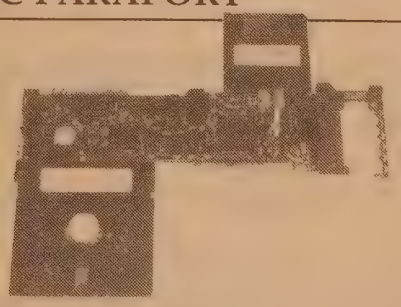

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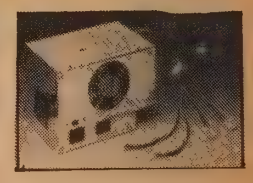

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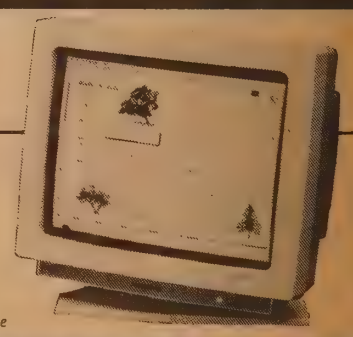

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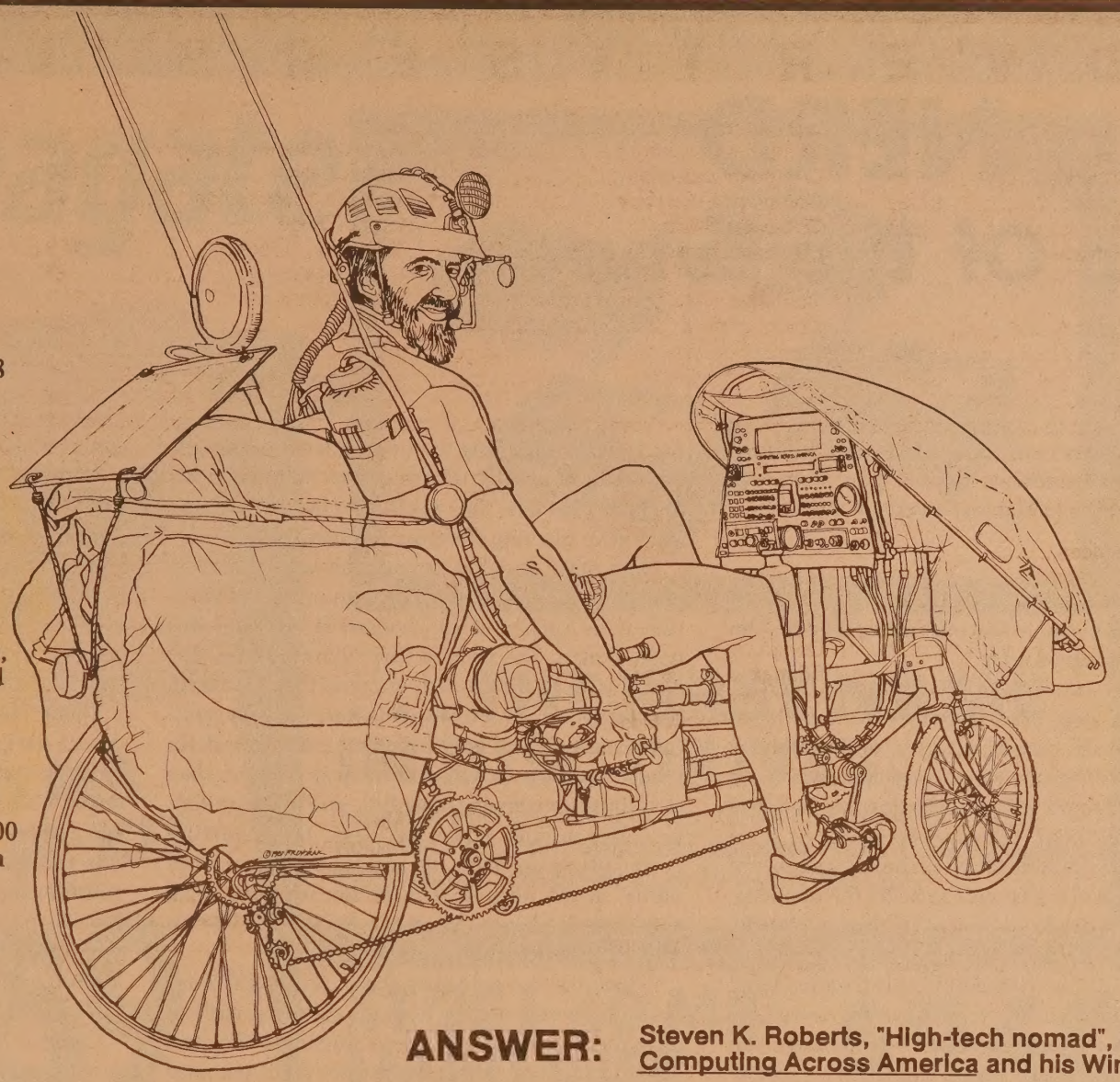

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The NERD
Man Of The Future

"...some were born nerdy, some achieved nerdiness, and some had nerdiness thrust upon them." — Barney Cohen (to paraphrase Shakespeare)

There is a group amongst us in this modern world who hold that edge above the rest. The technological edge.

They're the ones who are recognized as different, a little out of step. They have been called a lot of things: eggheads, retards, spazzes, dorks, and, recently, nerds. They are Homo Sapiens Nerdis.

The people upon whom we bestow the honor of the slang term "nerd" may have been with us since the days of the cave and stone ax. But the number of people with nerd traits seem to be on the upswing. There is even a candy named in their honor—**Nerds**, by the Willy Wonka Brands.

The concept of nerd cannot simply be considered to be a cultural curiosity. It must be viewed, as rather, a genetic trait destined to dominate the Western technological world. Nerds are a sub-species of the **Homo Sapiens Sapiens**; they are **Homo Sapiens Nerdis.** A potentially superior man of the future.

While this, on the surface, may seem ludicrous, let's examine the idea. For all that we know, "genius" is carried latent within us, like color blindness. It may be passed on with just the right combination of genes. Its occurrence cannot be predicted. The recessive genius or nerd genes may be deep within a part of all of us. It is the next major adaption simply waiting for the proper conditions. Perhaps those conditions are upon us!

After all, in 1918 a series of wars began. The country sent the finest, fittest, and most able non-nerd types to be slaughtered. The nearsighted, the exceedingly studious, the ones that marched to a different tune, the excessively different nerd-types, the "4-Fs", remained. This did not just occur for the so-called "War to End All Wars" (later retitled WWI) but for the two sequels as well—WWII and the Korean War. The result was a forever changed "gene pool," with the usual breeders gone. What remained were the nerds and those with strong nerd-like traits. All left to take up the mating slack.

The genetic alterations of such a catastrophic series of wars must have had a much greater impact than we have ever considered. For example, a quick look around us will show a greater number of near-sighted people than at any time before in history.

Certainly, the wars must have created a nerd boom. The tendency was, prior to the wars, that nerds were beginning to have a greater advantage over normal man. With the greater reliance upon nerds as breeders, the overall number of nerd and nerd-gene carrying offspring has increased.

What other possible explanation is there for the change in modern man? The frequency and duration of the last glut of war changed the evolutionary pace of man. The pace of inventions, as well, has also changed. One can only suppose that if the wars had not occurred (or if the nerds were the ones sent), the inventions that have become a part of our daily lives may never have been invented. It is the classic—invention breeds invention, and when prolific inventive minds exchange ideas, the invention cycle speeds up. With the sudden advent of more nerds, hence more inventors, the invention rate accelerated. This is the reason for the increase in scientific endeavor and discovery.

A look back over history shows that nerds were here and there, possibly from the start. The earliest examples of the classic nerd might be the pre-Christian scribes, who toiled for hours copying and embellishing manuscripts. The wizards, shaman, and religious prophets were stereotyped in much the same way as today's *wunderkind*—the computer masters. Even Christ may have been a pre-computer hacker-type.

Nerd children were always different from other children. They had extraordinary powers of concentration, and usually had a difficult time in socialization. Even the Bible made note of these unique people—the meek.

The meek were the ones chosen by the learned, introverted cognoscenti to carry the knowledge of the ages. Nerds chosen by master nerds. Mentor and apprentice. The mentor's protegés were chosen from all walks of life. Their backgrounds were not of the same importance as the genetic, or possible combination of socio-cultural and genetic, factors that combined to create the nerd—intellectual prowess, the physical traits, and the social idiosyncrasies. This was no different than the blacksmiths who chose boys with a certain physique and height, or even the choices in the recruitment of todays pro football teams. In other words, nerds picked nerds.

Perhaps in pre-historical times, the long-muscled, thin, and tall Cro-Magnon were thought of as curious oddities by the Neanderthal. After all, they were not the squat, heavy-browed, muscle-bound "he-men" that the ol' Neander were. The Cro-Magnon, and their spouses, may have been scorned by the rest, until their superiority could not be doubted. They over came, over took, and ruled supreme. Perhaps the same thing is occurring right now to man as a species—under our very noses. The nerd-scorners would probably discount all of this. But, then again, so did the Neanderthal, at first.

The nerd knows scorn too. What is the stereotypical nerd to you? A bespectacled jerk of a guy who cannot look you in the eye as he speaks to you, gives a dead-fish handshake, wears dorky clothing, and wouldn't be caught dead without a pocket-protector or a hex-dec calculator (which supplanted the old slide rule some years back). The perfect nerd will never acknowledge that either sex or the other sex exist, preferring to rely on the stork-delivery procreation myths. They have no inkling of physical activity, fitness, or—God forbid—body building.

These stereotypes are simply aggressive put-downs designed to keep nerds in their place. Historically, nerds have had to fight an uphill battle for respect. The fact that they were different bothered, and perhaps frightened, the standard man. The nerd was unable, without a struggle, to achieve prominence in the world. He has not been an abundant species. At least, not until certain factors made the genius's skills an advantage. The technological age has brought with it an increased incidence of genius/nerd.

Could it be that we carry within us a collective genetic memory—an instinct that senses their importance or potential power? A memory that stays just beyond our consciousness. A memory that recalls the fear of being supplanted—over and over—by new species. After all, throughout our evolution, the species with the greatest advantage survived. Perhaps we call them nerds because we both fear and revere them.

The big positive turning point for nerds, though, was brought forth by the computer revolution and the personal fortunes made by the likes of Steve Jobs and Steve Wozniak, the founders of Apple Computer Corporation, who became worth a quarter of a billion dollars each, almost overnight, by inventing a popular home computer. While the inventor-nerd had always done well for himself, and many millionaires came from this rank, few made so much so quickly. This clearly showed the potential wealth that introverted innovators could quickly rack up—thus changing the public perception.

Ridicule was transmogrified into awe. The nerd became the superhero overnight. It marked a change in societal direction and taste. One can sense something bigger is coming, that we've only begun to see what these new "supermen" can do when given free rein.

Inventions had been prolific at the end of the 1800s, but by the middle of the 1900s the scope and dimension of the inventions had exploded. The inventions were no longer modest attempts at locomotion that had been toyed with throughout the 1800s. The 50-year period from 1900 to 1950 saw the changes of horse and buggy, to automobile, to airplane, to jet, to breaking the sound barrier, to rockets, to men on the moon.

The only explanation—for the sudden technological explosion is mysterious proliferation of the nerd. ■

John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine and MacUser, and considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.

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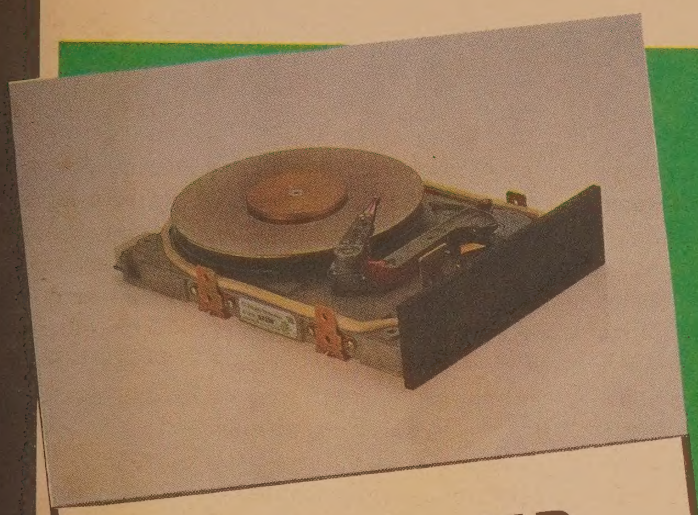

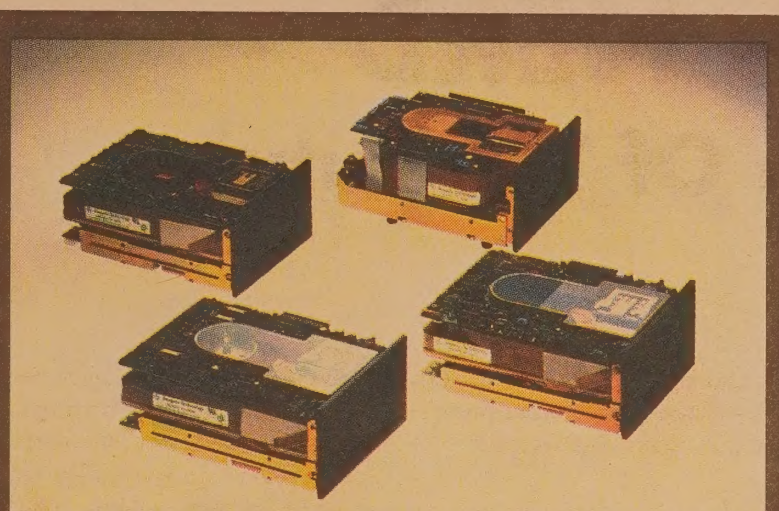

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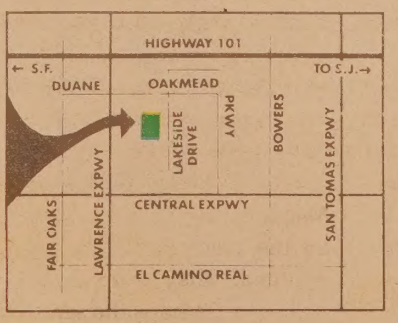

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